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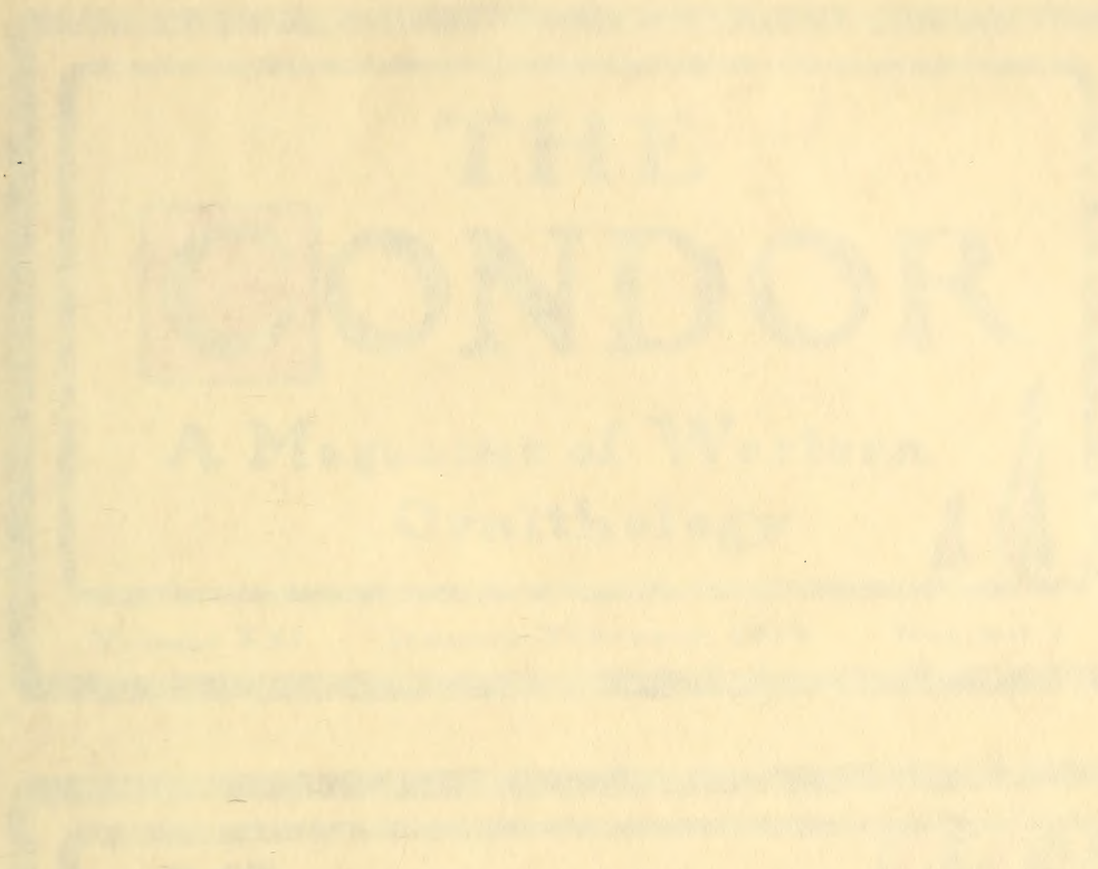

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THE CONDOR

A Magazine of Western Ornithology

Volume XXI January-February, 1919 Number 1

Smithsonian Institution
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COOPER ORNITHOLOGICAL CLUB

THE CONDOR

A Magazine of Western Ornithology

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Birds

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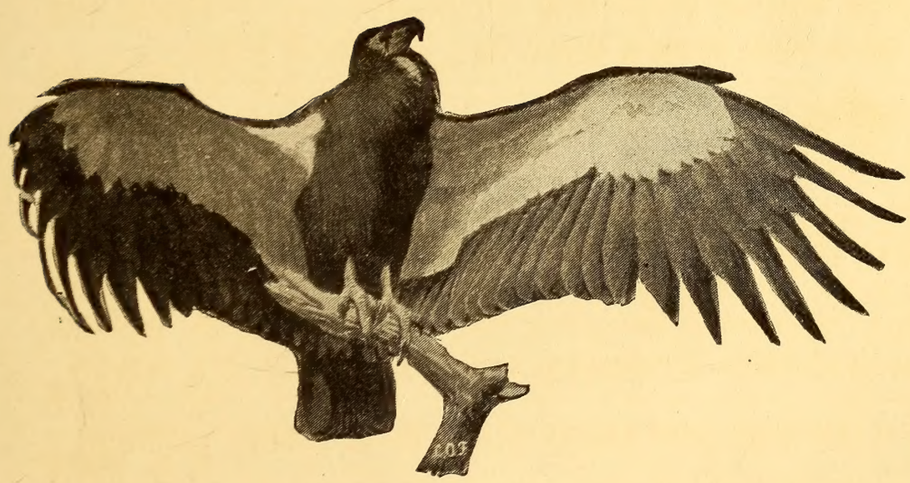

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A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

(*Continued from volume XX, page 178*)

V. FROM THE BRIDGE OVER THE COULEE

THE FARMER at whose house I stayed on North Sweetwater offered to take me down the road to the Belgrade Bridge over the Coulee, three miles south, one morning, on his way to town, saying that he almost always saw Ducks in driving across the Bridge, and that they were quite tame, being used to seeing people.

The Coulee was said to meander down across the prairie all the way from Canada, but although that would be only fifty or sixty miles, the map did not fully bear out the statement. At the southern end of its sluggish course it served as a connecting link between the eastern and western lakes of the Sweetwater chain, a few rods west of the Bridge opening into the middle one of the three western lakes, while to the east of the Bridge, by means of interlacing waterways, it completed the chain.

The Bridge, protected by only a narrow hand rail offered an unobstructed view of the narrow Coulee with its bordering cane and marsh grass, that, on the west, wound out past a long point into the lake; on the east, meandering out of sight between high reedy banks. To the north, from horizon to horizon, the view was of prairie grain fields. At the south end of the Bridge, a thicket of willows frequented by Goldfinches made a good screen from which to watch the more wary birds on the water below and to listen to the neighboring songsters. A large cottonwood looking down on the thicket attracted a Baltimore Oriole which might not otherwise have been found there; and when the wind rustled the leaves of the cottonwoods and willows, bringing the fragrance of the wild prairie rose, Song Sparrow, Maryland Yellow-throat, and Yellow Warbler sang blithely, while from the marsh grass beyond came the tinkling *clatter, clatter, clatter* of a Marsh Wren. Meanwhile, Red-winged Blackbirds and other passersby occasionally lit on the Bridge rail for a look about.

A Sora Rail was frequently heard along the marshy border of the Coulee and once when its song came from the high, partly-lodged marsh grass almost under my end of the Bridge, I mechanically whistled the scale after it. Instant response in loud ringing tones surprised me so that, without stopping to think, I craned eagerly forward over the Bridge, projecting my shadow over the marsh—a bad break for an old observer! Again I whistled, but there was no response, and the next song was well down the Coulee. Not until I had recrossed the Bridge on leaving did the loud clear scale come again in the same place, and never on any of my subsequent visits was I able to see that disillusioned Sora.

A few yards from the Sora's hiding ground, one day, I found the Yellow Warblers feeding young. The father of the family, with strong reddish breast streakings flew up into a conspicuous position on a dead willow where he sang loudly, trying to hold my attention while his duller mate, with food in her bill, flew in the direction of small voices down among the roadside weeds. Near the singing station of the Warbler, in a dead bush, two male Cowbirds faced each other, shining, glossy, and respectable looking in spite of their bad family reputation. Going on with an interrupted conversation, perhaps, they pointed their bills skyward, making themselves look very thin and sleek.

Passing Ducks, now a handsome Mallard, Shoveller, or Blue-winged Teal, occasionally dropped into the Coulee, a Black-crowned Night Heron flew over with neck drawn in, a Marsh Hawk pursued by a Redwing hurried by with a flash of white rump and red epaulettes, Black Terns skimmed past, and twittering Barn Swallows with their steely backs and buffy underparts swung around under the Bridge and over the water, in and out and round about.

There were so few passersby on this prairie Bridge ten miles from town that it proved an excellent observation station, and after discovering this, when not engrossed by birds in the sloughs, I came down to take advantage of what it offered. During my visits, at rare intervals I had to pick up my camp stool and shrink back into the willows, once to let some four horse grain wagons pass. Some days no one came to disturb me, and one morning during a two hour vigil only two passersby came, the crippled Rural Route mail carrier with his old white horse and bulging bags and a virile youth whose automobile was heard far across the prairie and who, bare-headed, flashed past full of the enjoyment of racing over the big prairies.

The only foot passengers were a family of pretty young "flicker-tails" which came up from their hole at my end of the Bridge and used the smooth level boulevard as a playground. One touched my foot as he came up through the grass, one day, and then calmly taking his stand about six feet from me where his bright eyes, spotted back, and sandy underparts could clearly be seen, bent over and taking his head in his paws, proceeded with a cat-like bath. While so engaged, a young brother came up, and with a slap of the paw they were off, scampering down the length of the Bridge, tails flickering. On the way back they sobered up enough to stop now and then and stand up on their hind legs, stretching up on tip toe to see better. Once when they had chased noisily down the Bridge past me, one of the pair came back inquisitively, and standing up close in front of me, calmly looked me over.

From the raised platform of the Bridge I looked down on the birds of the Coulee and got delightful hints of family histories unguessed before. In the sloughs, day after day, the gray Coots had run to cover before me, and when

at last by deep wading I had discovered a colony of nests the parents had already disappeared—the slough curtain had been dropped before my face. But from the vantage of the Coulee Bridge, I looked down on the birds pursuing their natural avocations largely unconscious of observation. The relief was so great that coulees, bridges, and high banks became my desiderata for the rest of the season.

Looking down on the Coulee to the west of the Bridge, only about a week after my discovery of the Coots' nests, I saw a gray, white-billed parent Coot swim out from the cane and marsh grass of the opposite bank and start across the water followed one by one by a long file of droll little red-headed, black-bodied young ones like the nestling I had put back among its brother eggs in its nest. With riveted gaze I joyfully counted eight of the swimmers, and afterwards when they recrossed the channel, one more had been added to the brood.

Three days later I was fortunate enough to find what I took to be two parents feeding their brood on the east side of the Coulee. That the two adults were parents of the one brood I inferred from seeing them together before I discovered the young, and finally seeing them all swim about together. When first seen the old Coots were crossing to the marsh vegetation on my side of the Coulee, possibly to see if they might better bring the young across to feed them; but after a few moments both returned, one swimming against the wind with head lowered. The north side of the Coulee was so well lit by the morning sun that I could see the small Red Tops swim through the wind-made arches of marsh grass, and when they were rejoined by their parents and divided into two squads, could watch them being slowly led up and down the edge of the Coulee; now outside, in sight—when I saw a parent dig around at the root of a cane—now in the cane labyrinth hidden from view, while the parents fed them. After working along different beats for a time, the parents led their broods up toward each other, but then as if realizing that it was easier to feed each little group by itself, turned and swam off in opposite directions. One parent who was followed by three young had a nervous air as if new to such responsibilities for little mouths, and led the ducklings along with its quick *pep'*, *pep'*, picking rapidly from the surface of the water, one side and then the other, turning back to let its small followers take the food from its bill.

A week later, on my third visit, I spent an hour and a half at the Bridge watching the Coots feed their young. As before, if my inference were correct, the two parents were taking care of separate squads. This morning instead of picking up tiny water plants from the surface, they got the food mainly under water, sometimes merely putting the head under and making dabs at the weeds, and sometimes diving for them. One parent—the mother, let us say—when followed a yard or two behind by two Red Tops dived and turned around under water coming up facing the other way to meet the laggards. I could see their red sealing wax bills open for the food held out to them. The mother may have been diving deeper than usual, for she would actually hop up out of the water so that her long legs showed, and then, pointing down her bill as a boy puts his hands together in diving from a height, would disappear below. When the bubbles rose over her, the young which had followed her would swim back to the protection of the canes and wait. When she reappeared they would swim out to her or she would swim back to them. Sometimes they would be so near that she merely reached back to them. She once gave one a piece of fila-

mentous water plant that suggested fine green seaweed, and waiting to see if the little fellow could manage it, finally helped him out with it. When one Red Top had had his portion, sometimes another would come up to take his turn, and once two of the quaint little Cootlings came together to swim close to their mother's bill. Several times when fed they dropped part of what she had given them and she had to reach down and pick it up for them. A pretty picture she made when reaching around one by her side to feed him—as if she were putting a motherly arm around him.

But the most interesting thing I saw was when she was diving a few feet out from the bank. Several times as she started away from the brood, one of the small Red Tops climbed up on her back for a ride. When he had gone far enough, she would rise and give a shake, and off he would go; whereupon she would dive and he would swim back to the bank. When both parents started to swim across the Coulee at one time, the rear one had a youngster on his back; and in the same way, when part way across, the small rider was quietly unseated.

The parent which I imagined to be the father—down the canes a few rods—went out and dived several times and when his followers did not appear, ate what he had brought, himself; though later he dutifully hunted them up to feed them. After a time, however, when the mother, if it were she, was diving by the shore, the father, if it were he, swam off alone across the Coulee to take a well-earned rest.

Meanwhile a young Coot, doubtless belonging to another brood, as it had lost most of the red of the head and was larger than those I had been watching, on seeing a motherly looking Duck swim by, started to follow; upon which the old Coot who was still patrolling the shore immediately swam down the line of canes and recalled all straying nestlings. That she was patrolling the shore and teaching caution was very evident. When a familiar Duck flew close overhead no one paid any attention, but when a strange hoarse note—probably from a Holbœll Grebe—was heard, the young promptly disappeared in the canes. And when a Marsh Hawk flew over calling, the mother made a pertinent remark that apparently kept the brood close to the protecting cover, while she swam outside looking carefully both ways. When a red necked Holbœll came up from below on her side of the Bridge, she eyed him intently, swimming alongside the canes with her brood till entirely satisfied. When a Bittern with wide brown wings flapped low across the water, the Coulee was suddenly bare of all inhabitants, and I inferred that he was an unusual visitor.

The Grebe which excited the scrutiny of the mother Coot, was seen two or three times from the Bridge, and its *cluck* was given as it came up from below, its black crown so wet that it flattened widely. Beside its *cluck* its "crow note" was heard once. In preening it leaned over showing the characteristic white Grebe breast, and when it went below, large ripples circled out from its vanishing point. It was probably a visitor from the west Sweetwater lakes, for when I saw it last it was swimming down the Coulee toward the lake. As it swam it helped itself in the familiar manner, moving its neck back and forth.

While the Coulee was bare, one day, two small Grebes with the pointed crests and gentle ways of the Eared came up from below and swam along side by side, a line of light running down their wake over the water. Looking just alike, diving simultaneously, coming up nearly together and swimming so close together that they made the point of a wedge for one ripping wake, they sug-

gested a pair of twins. As I was watching them, the horse of the Rural Route mail carrier came jogging along over the Bridge and they disappeared—every one in sight on the Coulee disappeared. When I had taken the farm mail and the carrier surrounded by his bags had gone on, the Coot was the first to reappear, but then from under the Bridge, side by side came the twins, crests up; most attractive little creatures.

In the Stony Point Bay I watched a pair one day swimming around among the canes. The two chums, like the pair seen under the Bridge, swam close together, dived together, and came up together. When the inseparables did get separated for a moment, the one in sight called and looked around nervously, then took a short cut through a cane projection to a bay where it found its missing mate; after which they swam back to their starting point, diving leisurely as they came.

The quiet Eared Grebes were a decided contrast to a pair of cocky little Horned Grebes also seen from the Bridge. The first time I looked down on one of them with his small head, short-pointed bill, and puffy black cheeks, the wind was blowing so hard that the feathers of his light side crests were blown about and he turned nervously from side to side. At my next visit I found him out in the middle of the Coulee by himself, absorbed in pluming and diving. When he came up wet, he would rise above the water and give a droll little forward shake of his body as if on purpose to fluff out the pretty side crests. Sometimes the fluffing would go so far that the black wedge of the crown between the light brown crests would be reduced to a line. As he sat on the water below me, I could see his red eye through the glass, as well as his reddish brown throat and side, and his black back. When he turned and lay on his side the beautiful white Grebe breast shone out as a good distant recognition mark, and he could also be recognized by the adept Grebe way of turning head over bill and vanishing below.

A few days later the cocky little Horned Grebe was feeding in the Coulee throughout the two hours that I spent on the Bridge above. As he came up from feeding below, he would plume his feathers, stretch a wing so that the white patch showed, and sometimes rise and flap both wings. As his crests dried, they looked silvery gray. Before I left he was joined by his mate who I imagined had just come from her nest. But as they were a second pair of twins, I could only judge by inference that as he had already attended to his toilet it must be she who now dipped and plumed and stretched a wing till a webbed foot showed behind.

As I watched them, a Duck flew up the Coulee disappearing around a bend. Then thunder broke from the clouds that had been gathering, and I started for the farmhouse three miles away. As the thunder rolled nearer, instead of conscientiously keeping outside the squares of wheat or following dead furrows where footfalls do no harm, with humble apologies to the farmers, I took short cuts across the growing grain. But even so the storm burst over my head, the rain quickly drenching me and the lightning flashing around me. Some children, pulling mustard in the wheat fields had also been caught, and as I neared the farmhouse I saw the farmer standing in the storm violently waving them to hurry home. Afterwards a friend who had been remonstrating with me about wading in the sloughs, quoted statistics regarding the number of people killed annually on the treeless prairies of North Dakota, ending by admonishing me never to be caught out in another thunder storm! So,

thereafter, before making my trips to the Bridge, I scrupulously noted both wind and weather. There was no use going, as I discovered after some fruitless six mile walks, if the wind were either east or west, for in those cases it swept the Coulee bare.

On one day when all the conditions were favorable, I found the Coulee on the west side of the Bridge occupied by Ruddy Ducks, the most individual and interesting of Ducks. The Ruddy might have been developed solely for the comfort of beginners tired of wrestling with obscure species. Signs hang all over him proclaiming his name. In profile he is a chunky little reddish brown tub of a Duck, with head and spike tail up at angles. His white cheek patch is a sign that all who run may read, and when he turns to swim away, the white under coverts of his upraised, uniquely-spiked fan tail label him again. But when he turns full face with the sun on him, his bright blue bill resting on his puffy ruddy breast is so striking that it seems almost unbelievable. A Duck with an Alice blue bill seems the height of absurdity! A detail decoration of this already overdone figure is added when his wet parted crown feathers stand up as two black-pointed crests above his blue bill!

Five handsome Ruddy drakes and a number of nondescript dingy brown ducks were on the Coulee, and from the Bridge I watched them for an hour or so, fascinated by the animated courtship play of the drakes, strikingly ruddy in the sun. When I arrived only two pairs were in evidence, the puffy little drakes looking very cocky and belligerent, suggesting pouter doves with their air of importance and the curious muscular efforts by which they produced their strange notes. When I first saw one perform, not knowing about his tracheial air-sac I thought he might be picking at his breast or have something stuck in his throat and be choking. With quick nods of the head that jerked the chin in, he pumped up and down, till finally a harsh guttural cluck was emited from his smooth blue bill. Often in doing chin exercises the little drakes pumped up a labored *ip-ip-ip-ip-ip—cluck, cluck'*, producing it with such effort that the vertical tail pressed forward over the back, as if to help in the expulsion, afterwards springing erect again.

Once a drake faced a duck about a yard from him and did his chin exercises and gave his raucous cluck as if definitely addressing her, but usually the performance was for the benefit of a rival. In one case two drakes faced each other a yard or so apart, and after nodding and jerking and clucking, with the feathers of their backs bristled up, swam at each other, such a violent chase ensuing that at the end the pursued dived to escape the pursuer. When no rivals were near, the drakes would sometimes make a noisy rush through the water —rising and paddling rapidly as if from pure excess of animal spirits.

There were soon three pairs of Ruddies on the scene, or rather three ducks and three drakes, for courtship was by no means over. As the action progressed, it became so rapid and complicated that it was hard to keep track of individuals and judge the merits of the case. When greatly excited the drakes would swim around with heads back and spike tails thrown forward till head and tail nearly met, their pose suggesting the courtship attitudinizing of Marsh Wrens; but when chasing each other with backs bristled up, an especially bellicose appearance was given by their swimming low with spike tails pressing the water, when they would rush along with a noise suggesting castanets.

Meanwhile the brown ducks, for the most part, swam along the edge of the Coulee, feeding or bathing as if quite indifferent to the play going on be-

fore them; and when the drakes joined them, they all swam around in prosaic unemotional fashion. One of the ducks, however, had been singled out and apparently won, for she was certainly being championed most vigorously. But, as if she were a prime favorite whose suitors could not give her up, her lord, whom I dubbed Lord of the Fray, went about with the proprietory airs of one whose possessions are disputed. When other drakes were near, he swam close beside her, getting her rapidly out of the way, and when perhaps a rejected suitor swam in toward her, chased him back with a decided air of "This is *my* mate, I'd have you know!" When matters were comparatively quiet, the Lord of the Fray having properly disciplined all the drakes on the west side of the Bridge, from the east side, swimming in under the Bridge, came a fourth drake, and with the appearance of an ardent suitor, swam straight toward the much disputed lady. At this the enfuriated Lord of the Fray bristled up, put his head down and swam at the interloper so hard he had to dive, ignominiously. When he finally came up he hung around for a while, but was so persistently snubbed that he soon swam back to his own side of the Coulee. It was altogether a most amusing comedy, but after all, why should we laugh when the unconscious players were merely puppets in Nature's hands as she worked out the great law of monogamy?

While the Ruddies were engaged in their jousting, though a Shoveller flew down with his *chuck-ah*, a Marsh Hawk beat over the tules, and a Crow passed nagged by a Redwing, nobody paid any attention; the pre-occupied Ducks ignoring them as completely as they did the ecstatic outbursts of the Sora from the high grass beneath the Bridge. This was on July 1. On July 3, although there was such a strong east wind that the large lake on the east of the road was angry with white-capped rollers, two Ruddy drakes were swimming along the Coulee. So peaceable were they, I could but conclude that courtship rivalries were over and their brown mates were inside the marsh, happily engaged in nest making. When a Shoveller and a Blue-winged Teal swam up the Coulee close to one of the Ruddies, he never turned a feather. The Law of the Family had been established. A Ruddy drake that I saw on July 6 swam out from under the Bridge, back ruffed up and tail down as if ready for the fray; but as no one came, he put up his tail, did chin exercises and clucked to himself, or —perhaps a brown dame was within hearing inside the canes.

Soon after this I started on my visits to other lakes, but late in August, I revisited the Bridge. With a strong west wind there was little to be seen on the sparkling water of the Coulee, but a sudden rapturous burst of song came from a Sora, probably the very one that had answered me by mistake earlier in the summer. The Yellow Warbler and Song Sparrow piped up as in June, but the cane bordering the Coulee had grown much higher, and brown topping plumes waved in the wind. A flock of Blue-wings flew rapidly by, and a solitary Shoveller, perhaps from a belated nest, lit on the water. At a sudden *plunk* at the end of the Bridge below me, I peered down discovering the head of a swimming muskrat. Its nose was well up out of the water, and I could see its hairy back and long ratty tail as it swam. But just then it dived under the Bridge, and was seen no more.

As I listened, a new sound was heard—the *thud, thud, thud* of a threshing machine in a wheat field beyond. Belching out straw, it was rapidly building up a high straw stack. Sheaves still standing, bundles being loaded onto some of the wagons, and carried up to the machine by others, made a busy scene. A

few days later—August 26—in crossing the Bridge again I happened on the concluding chapter of the Ruddies' history—a mother Ruddy leading five tiny ducklings up the Coulee—so, in spite of its unavoidable gaps, my Bridge work came to a satisfactory conclusion.

In following the marsh-bordered windings of the Coulee from the Bridge to the northeast, one day, I came to a small open lake, evidently connected with the Coulee in high water, over which two white Terns and a large white Gull were hunting. Commanding the lake was a brushy ridge probably used for hunting cover as the Ducks were hopelessly wild. When I appeared in sight a flock of perhaps a hundred Scaups rose, and soon after all stragglers of whatever kind departed. Beyond the lake, as I followed a cow path overlooking the Coulee and the adjoining pastures, filled with horses and cattle, an old Norwegian woman having a handkerchief tied over her head, and wearing a foreign looking cloth jacket and a big blue apron, came laboriously trudging up the path toward me, followed by two dogs. The dogs, like some of the horses and children I met in my unfamilar field costume, completed by camp stool and glass, shrank away afraid of me, but the weary old woman, after our greeting, motioned me to open my camp stool for her to rest. When I questioned her about the waterways in sight she pointed to the Coulee and making bends above and below, said "Lak, lak", going on in Norwegian with explanations that were lost on me.

Farther north, three miles east of the farmhouse across the prairie, and near the family tree claim, as I discovered later, was a second Bridge over the Coulee, and one afternoon about the middle of July, taking a child with me, I drove over in the family two-wheeled cart. As we approached, no water was in sight, but the high black frame of the iron Bridge loomed up from the surrounding greenness. A grass grown road led to it and the Bridge floor itself was earthed and green. "No automobiles go over that road once in six months" I had been assured when told to hitch old Polly to the Bridge—no fence being within reach—and I could well believe it when looking up the dim road beyond to the farmhouse on the horizon.

A flock of pretty little Bank Swallows almost flew into us at the end of the Bridge as if surprised by our presence, and fluttered and hesitated so close to us that the dusky bands on the white breasts were conspicuous. Barn Swallows were flying about the Bridge, now over, now under, and small voices from below us hinted that they were feeding young in safe niches of the foundation. A pedestrian—a Franklin ground squirrel, quite different from the "flicker-tail" in having a dark back and long tail, came trotting across the Bridge with pretty confidence.

Though the Coulee was here on its way down to the second Bridge, its current was so sluggish that it seemed to end in the green marsh grass. Coots had splashed away through the green on our approach and through the water weeds I could just make out a blackish head stretched cautiously around a bend of cane. Along the borders of narrow waterways glimpses were had of other swimmers, and once I caught sight of the snaky head of a Pied-billed Grebe, my first in several years, but it quickly dived and did not reappear. A brown Bittern rose from the edge of the canes and flew away, a pair of Black Terns were evidently feeding young in the marsh, one of them with food in its bill hesitating and scolding over our heads. Yellow-headed Blackbirds and Redwings were also apparently feeding young, the Yellow-heads going down again

and again in the same places in the canes, near which they clung to stalks and emitted their strange notes, their Red-headed Woodpecker *kar'r'r* and their Redwing *karrowe'* and *kerrup.* Maryland Yellowthroats were singing and the scale of the Sora came up from various parts of the marsh. In a mass of green at the end of the Bridge I caught sight of a mite of a Marsh Wren atilt of a stalk, singing a squeaky little song, *clack, clack-ah, clack-ah, clack* that changed to a scolding chatter as he watched us—*cha-cha-cha-cha-cha, cha.* But best of all were the loud joyous songs of the two Bobolinks, the Bobolink of the Meadows, and the Bobolink of the Sloughs.

From the water below us came the unmistakable throaty pumping of the Ruddy—*ip-ip-ip-ip-ip-ip—cluck', ip-ip-ip-ip-ip-ip—cluck'.* Absurd, self-important little chap! At the flat *tub'* of a Coot, Ruddy bridled, sat up, pumped, and clucked again. He was so close below and apparently so fearless that I forgot everything but my pleasure and interest in finding him there, and, off guard, must have moved, for, dropping his cocky air, he hurriedly started for shore, diving and swimming under water, coming up only to dive again. My little companion, greatly impressed by the field glass she held in her hand asked eagerly. "You can't see him through the water, diving, *with this here,* can you?"

As I gazed down from the Bridge over the narrow waterways through the green, looking for swimmers, a handsome yellow and black snake pulled himself sinuously across the Coulee. Beautiful tree-like water weeds standing in the stream bed and reaching up to the sunlit surface looked like golden filaments. On the opposite side of the Bridge, the knightly spears of tall Sagittarias rose above the water, while hair-like masses of weed lay on the surface garlanded with delicate flowers as if decorating the brows of some floating Elaine. Small blue dragon flies resting on the water weeds, large gauzy black-banded ones flying above, and exquisite orange-colored gauzy wings alighting on the Bridge, birds of the air flying about freely overhead, birds of the water swimming secretly through the mazes below, made a fascinating scene.

Over the Bridge-framed pictures of green fields and white clouds, the lights and shades shifted, with developing charm of color. With the sun under a cloud, the wheat fields were a dull green; as the clouds broke away at the edges, long streaks of light illumined the prairies; and when the last clouds melted away the whole broad landscape was flooded with warm yellow light. After watching the birds for a long time in their setting, the peace and beauty of that setting gradually dominated all the rest.

A strange Bridge it seemed—no link in the noisy traffic of the world, but merely a green-carpeted span across a green-veiled waterway, idling between green farm lands, winding around reedy bends and losing itself in marshy meadow borders; the only sounds coming from it, the buzzing of insects and the call of birds, as the sweet air of the prairie breathed quietly over it. No intrusive discordant elements of world traffic could enter here—no shrieking boat whistles, no rattling railroad trains. Away to the horizon stretched the green blanket, so far that, as you gazed, you felt the convexity of the great prairie—windmill sails on one horizon, houses half hid in wheat on the other. Even the untutored child at my side was impressed by it, asking incredulously, "Ain't there *no end* to the world?"

(To be continued)

THE SOLITAIRES OF SHASTA*

By WILLIAM LEON DAWSON

WITH FIVE PHOTOS BY THE AUTHOR

WHENEVER I recall those two magic weeks spent near timberline on Mount Shasta, I cannot be sure which image comes up first, whether the chaste menace of the eternal snows which crown the summit, the somber forest of the Shasta fir trees which girdles the mountain midway, or the gray ghostly shape of a bird which flits and vanishes by turn throughout that haunted forest. The snow-cap was a thing apart,—remote, incomparable, birdless; but the Shasta Fir (*Abies shastensis*), and the Townsend Solitaire (*Myadestes townsendi*) were paired entities, inseparable in the thought of a birdman. If the bird had elected to hide his nest in the ample draperies of blackbeard "moss" (the lichen, *Alectoria fremonti*), which clothed and disguised most of the trees, there would have been no occasion to write this history. A Ruby-crowned Kinglet, better advised, dared to tease us, daily, with his exulting song, and that right on the confines of Hardscramble Camp; for many wasted hours had taught us that his secret at least was secure in that mossy paradise. The guileless Solitaires, instead, placed their nests oftenest at the base of some giant of the forest, trusting to humility and chance. But if they took chances in the open, they did not publish their immediate whereabouts by unguarded song nor by fatuous visitations. Every nest discovered was the reward of diligent search, or else it was a gift, so earnestly desired that it was hailed as good fortune not to be despised because it was, for once, gratuitous.

At the time of our arrival at timberline, July 7, 1916, Solitaires were nesting, or had nested, at every lower level down to 5000 feet. In the yellow pine belt discreetly anxious mothers were supervising the education of hobbledehoys who rather resented further attention. But the snows had lingered late that season. Moreover, they had been replenished by a heavy and very unseasonable downfall on the first day of the month. The birds which were accustomed to nesting at higher levels were crowding the retreating snows in their anxiety to begin the nesting season. In all probability many nests had been overwhelmed, so that thereafter we were really witnessing a second nesting season. At any rate, the birds continued in full song up to the time of our departure, July 19; whereas Dr. Merriam, who arrived on Shasta July 15, 1898, saw but six birds, and declared them to be "always silent". Silent! Well, perhaps the future distinguished monographer of bears was even then attuning his ears to the music of *Ursus hoots.*

With this much by way of introduction, and because the writer has a theory that bird articles ought to write themselves (if the field work has been attended to), he is going to ask the liberty of quoting from his note-books, with only slight emendation and rearrangement, and so to present six separate sketches of Solitaires on Shasta.

V147/2-16 Townsend Solitaire; alt. 7200, July 8: Male heard singing in the tree-tops. The bird is evidently shifting about from place to place in a beautiful fir grove. His song is wierd, eccentric, and unstudied, as refreshing as it

*Contribution from the Museum of Comparative Oology.

is inconstant—scarcely excellent enough to have merited Newberry's encomium of "best", yet very gratifying to the ear,—and rare.

Bert [Mr. A. G. Vrooman, of Santa Cruz] had the good fortune to find the nest of a Townsend Solitaire 12 feet up in the heart of a rotten fir stump. All he had to go by was a bit of outcropping black moss, so he hit the stump a whack on general principles, and out flashed the bird. Since Bert had never even seen a Townsend Solitaire but once before in his life (in Trinity County, July 3, 1916), he was appropriately elated. He had, however, just been through a seance with another Solitaire about 100 yards away, and this, too, while he was passing a dead stump. The bird had appeared from the direction in which it had first been heard singing, and as it passed him it began to hover with slowly flutter-

Fig. 1. Nesting haunt of Townsend Solitaire. Position of nest V148/3-16 is indicated by white x.

ing wings, and with every appearance of solicitude. And this it did for a distance of a hundred yards, or until just before it lighted in a tree.

We have just visited the stub together. The bird flushed silently. We glanced hastily at the two eggs which the nest contained, then retired to a distance of thirty yards. Almost immediately the bird came back, so that we fear advanced incubation. The male presently came up also and sat silently, in plain sight, some fifty yards away. He scarcely moves and he says nothing, for *M. townsendi* is a very patient bird.

July 10: Returning to claim the eggs, we find the bird on, facing toward the exit. The eggs prove to be dead and, therefore, of quite an unknown age—

though one surmises the storm of the first of the month as the occasion of temporary desertion and consequent disaster. One of the eggs, moreover, has an ancient puncture, like a bill stab. The bird returned immediately after my first investigation, as she did also after I had taken the eggs. Quite daffy, you see! The heart wood of the stump proved to be so rotten that I could do nothing with it but tear it away, but I did save two neighboring chunks by way of local atmosphere. Nest composed chiefly of the blackbeard lichen (*Alectoria fremonti*) with a little ornamentation, upon the skirts, of the yellow-green lichen (*Evernia vulpina*). After I had removed the nest, both birds sat about, within twenty yards or so, and gave vent to the tiniest notes of complaint.

V148/4-16 Townsend Solitaire, Hardscramble Camp (alt. 8000); July 10: A Townsend Solitaire sings from a dead limb near the summit of a tall fir tree, not less than 150 feet above the ground. The song is broken and fragmentary, and is rendered in a matter-of-fact, passionless way which harmonizes well enough with the sedate bearing of the bird. Although it was a hot day, I could fancy that the sentry sang with redoubled vigor as he saw me poking and prying about old stumps and upturned roots. The joke is on me, and he knows it.

July 12: We have been regaled from time to time by Solitaire music proceeding from a point about 300 yards southwest of camp. Bert went down on Sunday, July 9, and was treated to a fluttering performance on the part of the male. He hunted diligently, but without result, while the male watched him silently from an elevated station. We returned to the charge together on Monday, but since we looked only for a stump nest we were unsuccessful. Hunting alone that afternoon in another locality, Bert found a nest, n/3, (to be reported later) *under the base of a tree.* With this clew Bert returned to the present prospect yesterday, determined to succeed. The male bird gave him no better light than before, so he set to work systematically to investigate the base of every tree in the neighborhood. At the end of two hours he flushed the bird from the downhill, or protected, side of a big Shasta fir, at least a hundred yards from the original station. The bird flushed and fluttered away like a gray ghost, and as silently. About 50 yards away Bert found what looked like a decoy nest, or abandoned claim, under the curving base of a tree. There was an abundance of fir twigs heaped about, and the rough outlines of a hollow, but no lining, save one chunk of blackbeard moss.

Today we are "trying her out" with a view to getting a picture of the sitting bird on her nest. She flushed very quickly at first, and required fifteen minutes and many feints to return. She flushed again as I leveled the Graflex at her, but she is back after a five minute interval. After another turn at settling and flushing, we watched the bird feint and settle. Almost immediately the male bird, whose presence we had not previously suspected, flew down to see that his mate was well placed, then instantly took himself off.

I succeed in snapping at 11 feet this time, but have a very poor show with the Ross lens. However, the light improves, as well as the disposition of my lady, and, to my amazement, I am able to get her with the Heliar, 8 ft., 7 ft., 6 ft.—all this not without many flushings and feintings. Finally, the sun shines full upon the critical spot,—5 ft., 4 ft., 3½ ft.—glorious! until the last plate is used up. Then I try the Premo with tripod. This bothers the birdie. She ventures back but is ill at ease and pops off again at the slightest excuse. It looks too much like a trap, especially when I come back to "work" it. A tube would have been the thing, but I am without one this year. Finally, in despair, I lie down by

the camera. The bird does come back at last, but she will not suffer any motion on my part. The light plays out and the game is off. The presence of the male, too, with his low creaks of solicitude has undoubtedly made the female more sensitive. The taking of the nest after all,—this is a heart-breaking matter; but Solitaires are more common than we are.

Nest a very frail, careless affair of scattered and spread sticks covering an area a foot square. Nest-hollow, carefully lined with grass obtained at some distance, 3 inches across by 1½ deep.

The most important point to emphasize in the situation is the near presence of snowdrifts half encircling the tree under which the nest is placed, as, of course, the photographs show. The significance of this did not fully occur to me until in the afternoon Bert showed me the nest which is to be (D. V.) *V149/3-16 T. S.*

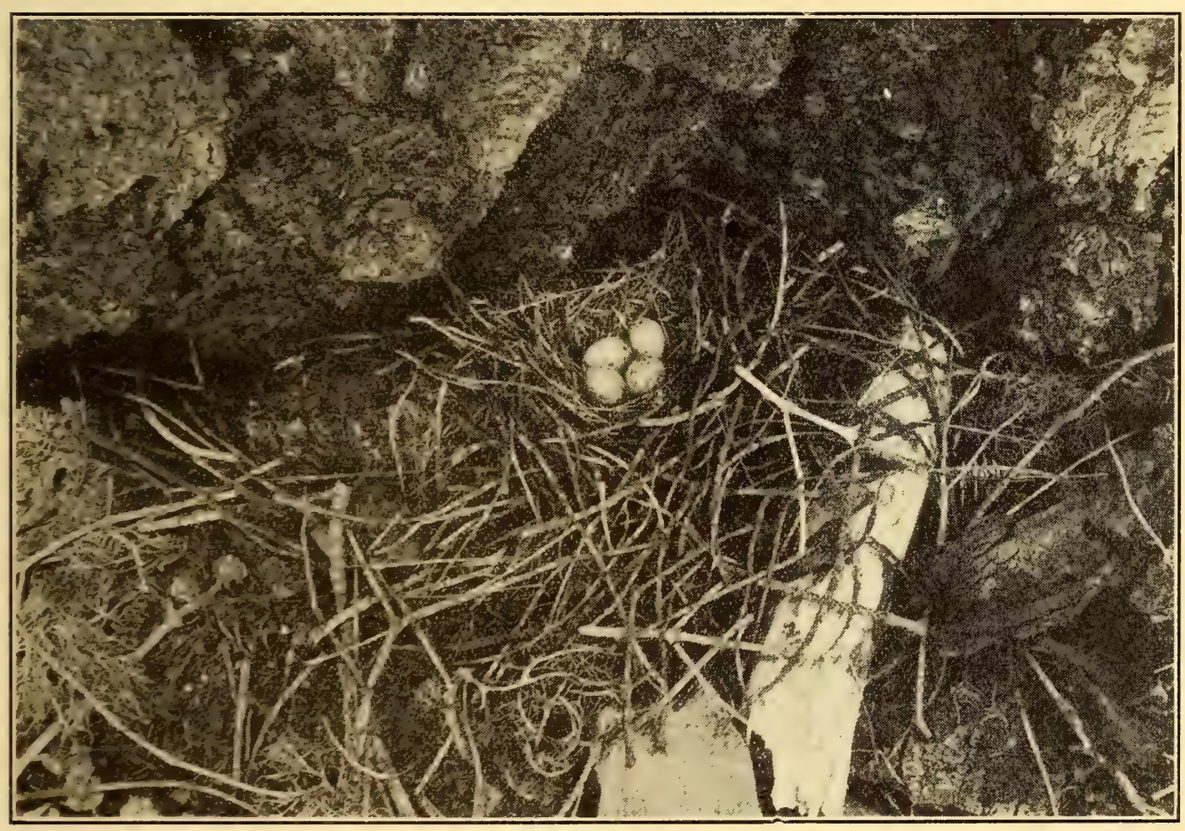

Fig. 2. Nest and Eggs of Townsend Solitaire; V148/4-16.

The bird flushed lightly from a situation almost exactly like that of *V148/4-16*, and then fell to bug-catching. In this pursuit she again and again *alighted upon the snow*, securing there, no doubt, benumbed or dead insects—a sort of Leucosticte of the lower levels. Snowbanks, then, are, perhaps, an agreeable feature of Solitaire environment. We spend the afternoon looking up Solitaire prospects, and hear three singing males, all believed to be new.

V149/3-16 Townsend Solitaire, alt. 6900 feet, July 13, 1916: Nest found Monday, July 10, left for egg complement; revisited yesterday, as mentioned. My hat is off to Mr. Vrooman for having made this location, for the crooked-based tree which gives the nest shelter is simply one of ten thousand which clothe the mountain; and the male does nothing more by his presence than to set one to looking anywhere within 200 yards. Nevertheless these exact conditions have to be met: shade, shelter, outlook, and the near presence of snow-banks. The sharp falling-away of the ground immediately below this tree, i. e., after the nesting

shelf is cleared, would seem to make it peculiarly acceptable. The composition, or rather the setting of the nest, even more than in case of *V148* suggests complete harmony with its surroundings. For, curiously enough, there are some fallen wisps or bunches of the yellow-green lichen at the base of nearly every tree hereabouts, and as likely as not a considerable admixture of the blackbeard moss. In searching, therefore, one sees dozens of spots which precisely resemble this one, nest and all.

The bird had just gone into shadow today as I made my appearance at 1:15 P. M. I have considerable time, therefore, to accustom her to the presence of the camera before the next full sunshine falls. The male sings a little in the offing just to let her know he is on the job. At my first approach the female allowed me to come within five feet, then dashing silently off and downward, fluttered ostentatiously over the ground. I retired while she had a bug or two, exchanged confidences with her solicitous mate, made a feint or two and was back, within five minutes. At my second approach I got within three feet before she flushed. Then she flew silently about 15 feet before she checked, and began to fluttter laboriously, with tail depressed and wings held high. I retired and she was back, by direct descent from an overhead limb, within two minutes. Thereafter follows nearly an hour of getting acquainted—so successful, indeed, that I am miserable over the prospect of either horn of the dilemma, taking or leaving the eggs. I make advances quite professionally, but my heart does not go out, and my methods are both harsh and hasty. Nevertheless, when the shadow does clear at three o'clock, I have the bird tamed so that I can go right up with the Graflex and *bang away at two feet.* This I did *ad nauseam,* and the bird never stirred. But when I brought up the Premo and tripod and stood it over her, then there was trouble. She would stand the camera, but she wouldn't let me put out my hand to snap it. But she was plucky! Back and forth she went, back and forth,—till, finally, I took charge of the situation and photographed the eggs. Then I put my photographic apparatus up, intending to take the eggs in spite of all conscience. But the way that bird recovered those eggs would have melted the heart of a rhinoceros. I photographed her some more, then sat down to write these notes. The eggs are exceptionally large and handsome with heavy red spotting. The nest would be a prize in itself, composed, as it is, chiefly of blackbeard lichen, whose skirts overlie heavy clumps of Evernia lichen, like lace over silk. The nesting hollow is, of course, of fine dry grass.

During our prolonged seance we were visited by several curious birds, notably a pair of Red-breasted Nuthatches. Once I found my Graflex camera unwittingly pointed at a nuthatch not over six feet away; but alas! I had on the Ross lens, whose minimum range is 11 feet.

215/3-16 Townsend Solitaire; Squaw Creek; alt. 7800 feet; July 14, 1916: At the first sound of a singing Solitaire, I set to work to look for nests at the foot of the trees. Almost immediately I found one tucked away in a cranny under the base of a giant Shasta fir, so completely concealed, indeed, that not a twig of its fourteen-inch spread could be seen from a point straight above. The twigs were in perfect condition, but the disarray of the grass lining, as well as the sodden condition of the only bit of moss, blackbeard lichen, which the structure boasted, apprised one that he was viewing an old nest, presumably last year's.

The hillside here carries a magnificent forest of Shasta firs, each with its curve-kneed base and its lichen-covered shelf on the under side. The ground was, also, sharply sloping and, although a west exposure, is still half covered with

snow. I set to work in good earnest examining the bases, and had accomplished nothing in an hour's work, so sat down on a rock for a cold bite of lunch, determined to see if I could get any lead. I did see a bird flit about 75 yards up the hill, but it disappeared against, or behind, a tree bole and I saw nothing more of it. These birds have a marvelous way of slipping around unobserved. The next I knew a male was singing overhead 125 feet up. By and by I had the rare pleasure of seeing and hearing the ecstatic song flight of the male. From a height well above the treetops and 300 feet above the earth, he descended, slowly, in a great spiral, with fluttering wings. More than ever he looked like a Mockingbird, except that his action did not savor of the grotesque. The song torrent was light and sprightly in character, reminding me more of the breathless rhapsody of the Lark Sparrow than of the measured accents of the Thrush. This

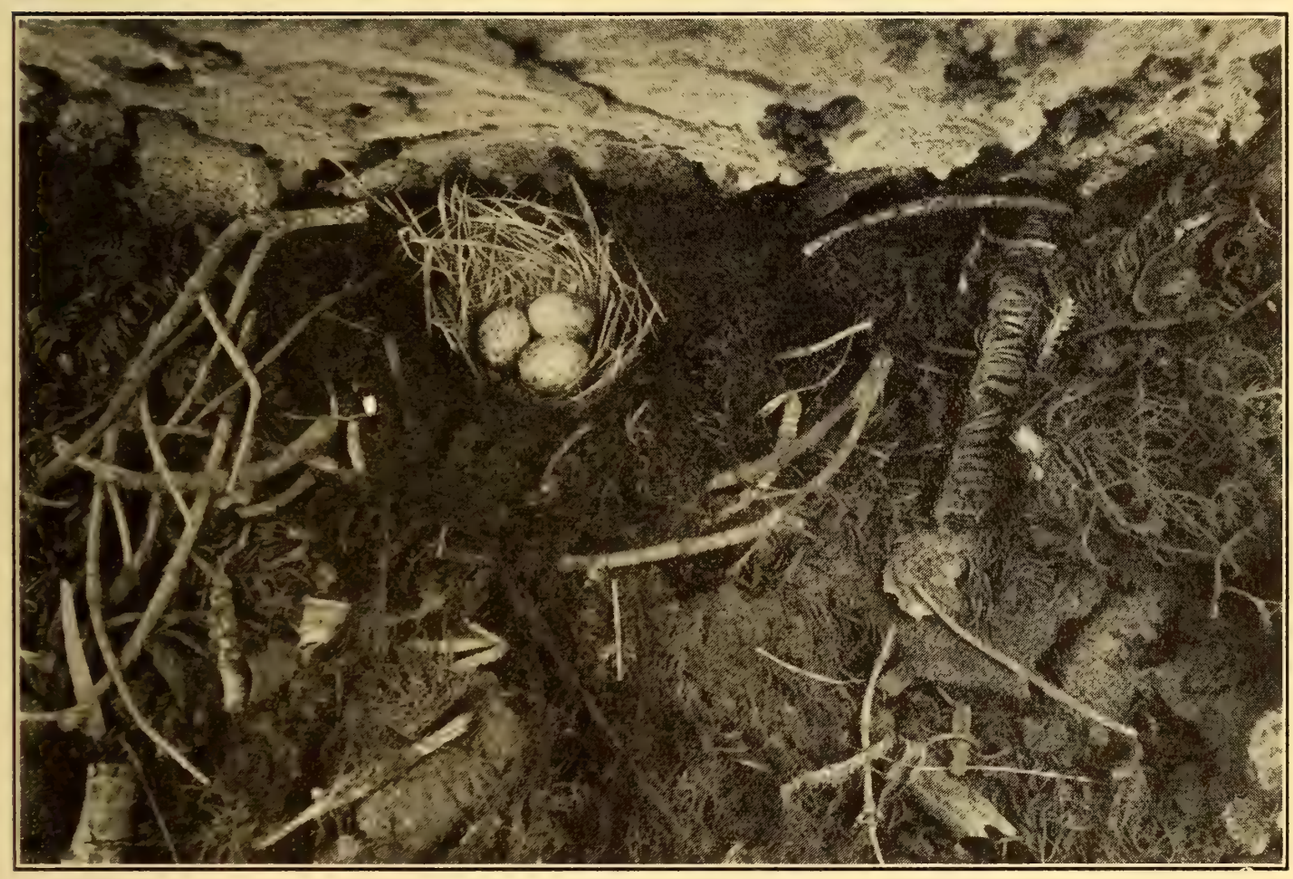

Fig. 3. Nest and eggs of Townsend Solitaire; V149/3-16.

exercise over, the bird descended through the trees and allowed himself to be seen on several occasions in an open bit about a hundred yards down the hill. Several times he visited the ground, and twice I saw another bird of the same species get up. Once there was quite a spirited passage, a bug and a hug as near as I could make out, after which the mysterious second bird disappeared by a dive to earth. I'm on to their game this time, I guess.

With quite a complacent feeling I worked my way down to the scene after lunch. In my confidence I even stopped to take off my sopping boots and dry them, preparatory to "landing" the nest. The male improved the occasion by betraying his anxiety in various ways—first by little sotto voce snatches of song intended for the ear of the sitting female, and then by that weird pendulum creak, whose qualities I have so often remarked. This sound is really indescribable, yet it invites renewed effort at comparison. It has been called a "bell

note", but it is more nearly a bell-like croak, a ghostly, ventriloquistic, droning sound, a rusty hinge creaking in the wind, a voice of conscience coming from no whither and heard within.

But the bird was not to be found at the base of a certain preappointed tree. Nor yet was it found with the nearest neighbors. What could have become of it? A quickened and then an anxious search followed. But there were no more leadings from the birds. Frantically I examined every tree base within a hundred yards. Nothing doing. This repeated loss of time was getting serious. Fervently I prayed, "Oh, Lord, let me succeed just this once". I half believed the answer would come, but I had some misgivings as touching the efficacy of the *bird's* prayer.

Well, before I went back to camp I would toil up the hill and see if there was anything doing on the hillside, where I had seen the bird disappear. Cunning hidey holes there were at the bases of the trees, but no nest. A bit of moss which protruded from a tree-trunk, a noble bole 3½ feet in diameter, a little below where the regular coating of Evernia commenced, attracted my eye. It seemed to come from a hole rather than from the surface, as the other moss did. I levelled the binoculars. There was quite a bunch of moss in the hole, and behind the moss a gray head and a—yes, I am sure that is a glittering *eye*. Why—why, that's the tree where my bird disappeared! *It flew straight into its nest and I never knew it.* But whoever would have thought of such a thing? An unbroken shaft of a sturdy live tree, forty feet to the lowest limb, and clad, as all proper fir trees are, from about twenty feet up—above the snow line—with a shaggy coating of Evernia lichen. Yet here was this hole as sharp cut as the print of a giant spear-thrust, eight feet up from the ground.

Well, the bird flushed when I was within twenty feet and I never saw her again until the nest was gathered (perhaps I didn't look very hard; I wasn't in a sentimental mood). The hole was ten inches deep both horizontally and vertically, but was only four inches wide in the middle passage. The bird had shaped her architecture admirably to the accommodations and even sat with tail pointed in—quite a luxury for cramped quarters. Nesting hollow 3 inches across and 2 deep, grass and pine needles with twigs and abundant moss (Evernia lichen) for the porch and filling. Bird returned repeatedly and silently after nest was removed, but there was no further demonstration either on her part or that of the male. Eggs fresh as paint!

218/4-16 Townsend Solitaire; alt. 8200; July 17: You never know your luck! Also, they nest *anywhere.* I had eaten my Monday lunch in a sunny clearing, which had once been swept by a landslide, but is now being re-covered with scattered saplings. After that I set out to cross the remainder of the clearing, when I spied a Townsend Solitaire sitting in the top of a small sapling about fifty feet from the edge of the woods. He was almost immediately joined by a bird which seemed to come up out of the open (dwarf) manzanita. There was a feeding scene, with some evidence of tender solicitude, whereupon both adjourned to the woods. I followed, after an interval, and as I entered the somber depths a bird shot back past me into the open, and disappeared in a flash into the central depressed portion of the manzanita patch. I followed again in some bewilderment, looked carefully at the bases of the few saplings in range, peeked under a few stones, and headed for another, for no particular reason, since it was one of hundreds. But out from under this one flushed Mistress Myadestes, and the secret was out,—*218/4-16 Townsend Solitaire,* right out in the open of

a sunny hillside. The nest is a very slimsy affair composed entirely of needles of the white-bark pine, with a front porch, or skirting, of pine and fir twigs. The needles have no coherence, and merely line thickly a hollow made in the soil under the full protection of a rock, and behind a partial screen of dwarf manzanita (*Arctostaphylos nevadensis*). Hollow of nest 4 inches across by 2 deep. Skirt, which was saved and wrapped separately, about 4 inches wide. Female only flitted back and forth restlessly and uncomplainingly, alighting for the most part on one and another of the tiny fir saplings. Eggs about half incubated.

V150/3-16 Townsend Solitaire; alt. 7500; July 19, 1916: Bert had made the location six days ago, Thursday, July 13, but the nest at that time had no lining,

Fig. 4. Townsend Solitaire on nest at base of Shasta Fir.

and he was skeptical of results in the time allowed. The nest was a straight find on his part, on the basis of birds seen in the neighborhood and manifestation of desire for mating on the part of the female. Nest under rock on sloping hillside in deep woods. Shasta firs up to five feet in diameter in immediate neighborhood and snow all around, the nearest bank fifteen feet away.

As we approached, this evening at six, the bird was sitting tightly, so we suppose the set to be complete. Certainly this is quick work from a nest without a vestige of grass six days ago! Nest in triangular, receding cranny, with earth floor ten inches deep under cover, six inches wide at middle of nest. Nest proper 3½ inches wide; 1¾ deep. Twigs covered with blackbeard moss for skirt, some

grass for lining. Bird gave the *dong* or *creak* note after we had taken the nest. Male afterwards sang snatches of song in the distance, but neither put in an appearance.

This makes the sixth set of Townsend Solitaire which we have taken in ten days. It is altogether probable that this species is the commonest and best distributed in the Shasta fir belt and the mixed belt immediately below. If we reckon the belt at three miles wide and fifty long, and allow for each pair of birds an area one-quarter of a mile square, we have fifteen hundred as the Solitaire population of Shasta, a figure I believe to be well within the mark.

Mr. Vrooman was particularly successful in finding old nests, as well as

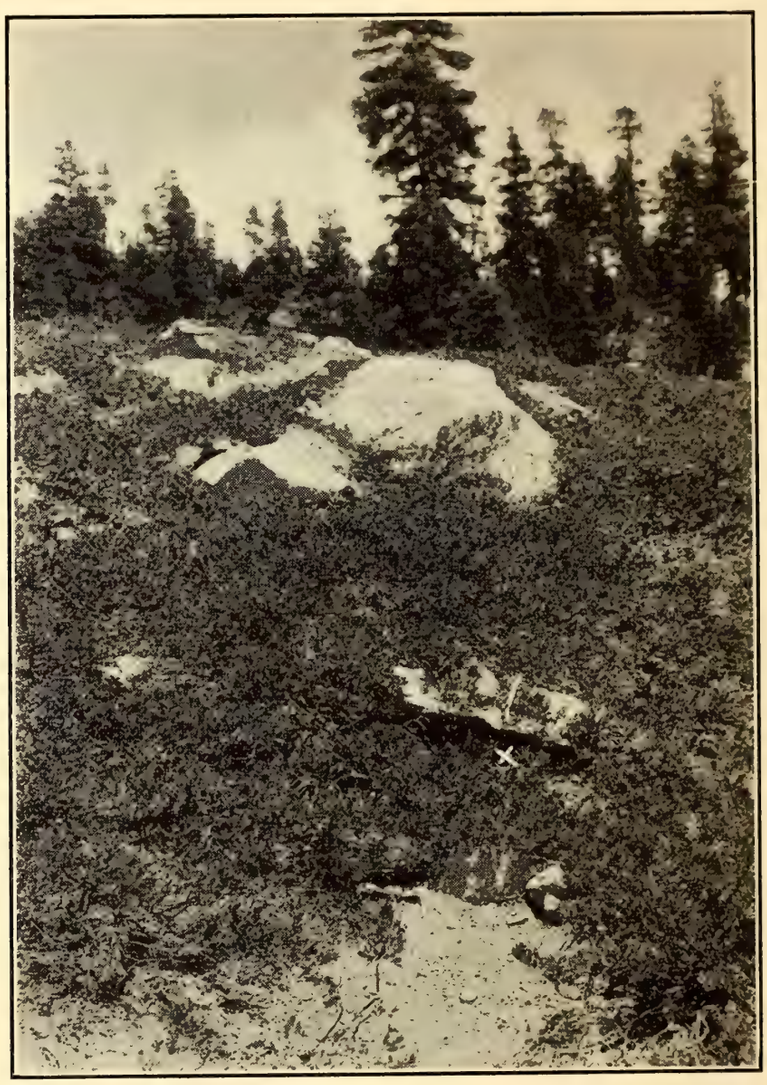

Fig. 5. Nesting Site in Dwarf Manzanita. Location of Nest 218/4-16 is indicated by white x.

new. He showed me another ancient relic in a rotten stump three feet up, and told me of four which he had found in upturned roots of fallen trees. Besides this he showed me an abandoned claim in a cranny formed by a broken but not completely severed tree, where the birds had deposited a few twigs, a bit of moss and several blades of grass. The evidence was scanty but sufficient. But also the cause of dissatisfaction was manifest, for the quarters were quite too narrow.

Santa Barbara, August 4, 1916: Having still to blow the eggs of *V150/3-16 T. S.*, I pause to note exact colorings. In ground color the three eggs represent the two types of coloration spoken of by Grinnell in his San Bernardino Re-

port, namely, the white with palest possible blue-gray tinge, and the definitely light blue type. In this set one egg appears almost pinkish as to ground, by reason of the diffusion of red markings, and the probable warming effect of the contents. The more pronounced type is of the palest niagara green; while the markings of both are of ochre red and prussian red.

These six sets of eggs reposing in nests "taken with the bloom on", now occupy an entire drawer in the collection of the Museum of Comparative Oology. Only one of those who gaze upon them is able to recall a flood of delightful memories (Bert alas! is exiled at Santa Cruz); but with these authoritative trophies for a text the Director will be able to point out to hundreds of others something of the "meaning of things", and to fill the minds of strangers with a sharp unrest until they too have heard the Solitaire sing on Shasta.

Santa Barbara, California, December 1, 1918.

NESTING OF THE SHORT-EARED OWL IN WESTERN WASHINGTON

By E. A. KITCHIN

WITH FOUR PHOTOS BY E. A. KITCHIN AND J. H. BOWLES

IT HAS heretofore been an unsettled subject, though much discussed among the bird men of this vicinity—that of the local nesting of the Short-eared Owl (*Asio flammeus*). Though the birds are common in the fall and winter, no records had been established of their breeding here.

Our Tacoma tide-flats cover several square miles of territory. Through the center runs a road that acts as a dyke, keeping out the tide that at one time covered nearly all this region, especially in the winter when the highest tides occur. Deep sloughs that twist and turn, intersect this whole section and act as channels for the waters of the incoming and outgoing tides. In the winter the Short-eared Owls are generally flushed from the edges of these sloughs where they hide most of the day, under some over-hanging grass or weeds.

Judging from various descriptions of nesting locations east of the Cascades, the proper places to search seemed to be where the grass or cover was long enough to afford good concealment for the large clutch of white eggs. I knew a sixty-acre tract on our flats answering this description, lying well above the summer tides. Last year I worked back and forth over this ground, using up several precious Sundays, but failed to locate a nest or even to flush a bird; and were it not for the fact that on one certain afternoon I saw two pairs of owls skimming back and forth in search of food, I would not have tried again. Firmly convinced that they did not use this heavily grassed section, I resolved this year to try the edges of the sloughs, their habitation in the winter months, the result being that two nests were found and photographs and records made.

My first effort this year (1918) was on May 6. Securing a stick about eight feet long, I traveled up the side of one slough and then down the other, keeping the length of the stick from the edge, and after about two hours of this was rewarded by flushing the owl from her "nest and four". When she jumped she scattered three of the eggs out of the nest but none was broken. The nest was placed in a very open position and the eggs could be seen sixty feet away. A

slight excavation scratched in the hard ground and lined with a few short stalks of coarse grass, was all the material used or work done. The coloring of the bird on the nest so blended with the surrounding grass, that one had to get very near to distinguish her. When flushed she did not remain near the nest, but departed, with a small army of Red-winged Blackbirds in pursuit. A visit two hours afterward found her back on the eggs, where she was left undisturbed.

Though we did not collect any of the parent birds, I am taking it for granted that it was the female that was always on the nest; we generally flushed the male from his own little den nearby.

The next day, accompanied by Mr. J. H. Bowles, I again visited the nest, flushing the bird at about twenty-five feet. We found the eggs "pipped" so, after taking several photographs, we beat a hasty retreat as there was a cold north wind blowing and the eggs needed protection. Careful examination of the nest and vicinity failed to reveal any remains of food, nor were there feathers

Fig. 6. Tidal marsh near Tacoma. The edges of these sloughs are used as hiding places and nesting sites by the Short-eared Owl.

of any kind in the nest. I am mentioning this as we found a different condition a week later.

We then "roped" another section of the flats and were rewarded by flushing a bird off her nest, which contained three eggs. These eggs were also "pipped", and the nest lay in the same exposed position as the former one and at about the same distance from the edge of a slough. The ground here was not quite so hard and there were four or five dead weed stalks for a back-ground. The male jumped less than a hundred feet away. Both birds left at once and were not seen again while we were in the vicinity.

On May 18, a week later, I paid my next visit, accompanied by Mr. Stanton Warburton, Jr. Visiting the first nest, we found the bird upon it. Only two

young occupied the nest, and they were rudely spilled out when the old bird left. One was big and strong, but the other was very small and weak. The larger bird snapped his bill in true owl fashion. There were no remains of the other two eggs, but we strongly suspect a crow had something to do with their disappearance, as four white eggs, exposed, can be seen from quite a distance, and this section is a common flyway of crows.

There were no signs of food about the nest, except a quantity of small bird feathers, which startled us somewhat, as we never had cause to suspect these owls of preying upon birds of any kind. The wing of a Lutescent Warbler was easily recognized, and there were plenty of feathers of either the Russet-backed or the Alaska Hermit Thrush, as well as those of the Western Meadowlark. The male bird was not seen on this trip and the female left at once.

Visiting nest number two, we found that all three eggs had hatched, and it contained two large owlets and one little fellow several days younger. The nest

Fig. 7. Nest and Eggs of Short-eared Owl. The first set found.
Photo by J. H. Bowles.

also held a headless mouse, and a quantity of bird feathers. We identified the Lutescent Warbler, likewise thrush feathers and some undoubtedly of the Western Savannah Sparrow. The female allowed a nearer approach than before, about fifteen feet, and hovered over our heads at a distance of perhaps a hundred yards.

We were here treated to a most ridiculous performance by the male bird. While watching the female we suddenly heard an awful groaning and chuckling sound behind us. This was the male and he was mad clear through, darting back and forth and uttering these awful sounds. Finally, he could stand it no longer and literally dove into a bunch of high weeds, where he twisted and turned, and to watch the tops of the weeds one would think that nothing less than a death struggle was going on. Finding this would not decoy us he joined his mate, and they circled overhead, while we took several snap shots and departed.

My next visit was on May 25, one week later. I visited the first nest, but

found no trace of either the two young birds or the old ones; no trace of any recent feeding nor signs of habitation in or about the nest. Of course we do not know what became of them, but feel certain that the old birds had carried their offspring to a new location, as the young were much too small and weak to fly or even to stand up. Leaving the nest, I had not proceeded more than a hundred feet when up jumped a Pintail from her nest and nine eggs, showing that ducks at least are not afraid of Short-eared Owls. But fancy a duck neighboring with cousin "Great Horned"!

Proceeding to the second nest I advanced very quietly, as I wanted to approach it without being seen. This bird seemed to show more care for her young than the other one, and I was very anxious to observe, if I could, just what was going on "at home", nor was I disappointed. During the day it had been very hot and close for this region, but a distant thunder storm had suddenly created a strong cold wind that blew sharply across the flats. Crawling up behind an old

Fig. 8. Same nest as in fig. 7. Young one week old.

log, I peered over the top. The parent bird was lying somewhat sideways, with one wing uplifted, protecting her babies from the cold wind. The three little ones were cuddled up close to the mother bird, reminding one of an old cat with her kittens. What a chance for a real photographer! I tried to get a picture, but the old bird took alarm before I could get near enough. Examination of the nest showed no signs of food other than fresh, tell-tale feathers, which were again in evidence. The little ones, over three weeks old, were still in their downy state, although pin feathers were sticking through. They were still too weak to stand, and lay in a helpless group snapping their bills. Neither of the old birds came near while I remained.

June 1 was the date of my next and final visit. I approached quietly, and was greatly disappointed in finding the nest empty and the birds gone. A careful search for over two hours, up and down and around the nest, failed to dis-

close either young or old birds, nor did the nest look as if it had been occupied for several days. It seemed almost certain that the old birds had carried off the young, perhaps on account of my weekly visits, probably to a new hunting ground. The only thing I am sure about, however, is that the young birds did not fly themselves, as their wings could not have been feathered enough, nor had they the strength. This nest was on what was practically an island formed by the sloughs so that no passerby could have been within several hundred yards of it.

In summing up briefly the knowledge gained by my visits to this owl's nursery, certain items stand out prominently. These are the small sets laid, appar-

Fig. 9. Second nest found. Young three weeks old.
Photo by J. H. Bowles.

ently, by the owls on this side of the mountains, the open sites selected for nesting, and the fact of the parent birds catching and feeding small birds to their young. I hate to accuse them of this, but the truth must come out. Another very striking thing was the manner of flight of the parent birds at times after the young were hatched. They would fly to a height of perhaps a quarter of a mile overhead and then sail about on motionless wings, precisely like a Buteo. A casual observer would never have suspected for a moment that they were owls. Altogether, while no specimens were added to the collection, a most interesting fund of information was gathered for our note books.

Tacoma, Washington, August 3, 1918.

PROBLEM: DO BIRDS MATE FOR LIFE?

By J. EUGENE LAW

WITH ONE PHOTO BY L. E. WYMAN

THE excellent article entitled "Evidence that many birds remain mated for life", by F. C. Willard (CONDOR, xx, 1918, p. 167), is pregnant with problems for the bird ecologist. Another angle of view may further emphasize the value of intensive study, such as Mr. Willard's article indicates, and the necessity of carefully recording in the minutest detail every incident in a bird's life history.

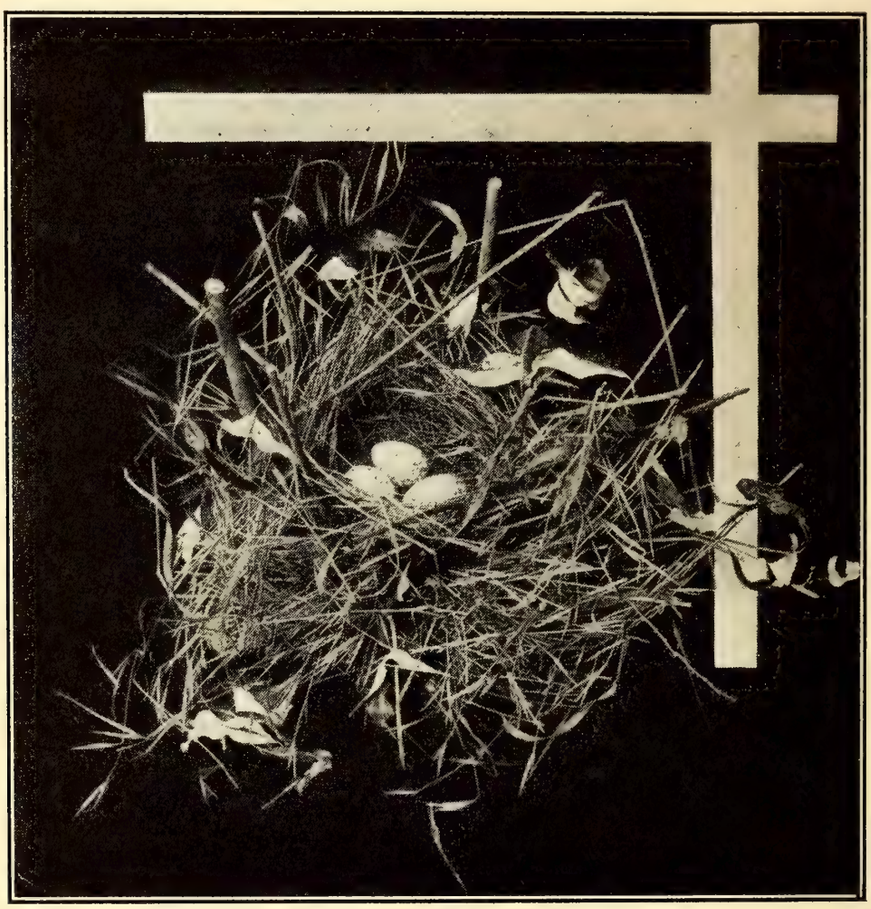

Fig. 10. NEST OF CALIFORNIA BLACK-HEADED GROSBEAK CONSTRUCTED MAINLY OF WILD OATS. THE EGGS SHOWN ARE BORROWED, AS THE TWO EGGS ORIGINALLY FOUND HAD BEEN DESTROYED WHEN THE NEST WAS NEXT VISITED. THE STRIPS AT TOP AND RIGHT ARE EACH ELEVEN INCHES LONG.
Photo by L. E. Wyman.

The precariousness of life among birds leads one, even though paired birds normally remained so, to doubt so uniform an escape from fatality as would follow, did the numerous incidents noted cover pairs mated throughout the period of Mr. Willard's observations. If lost mates were replaced, no doubt the surviving mate drew the new one to the old home of the survivor[1]. Male hummingbirds are notoriously indifferent to any family relations, further than the actual act of fertilization. The Anna Hummingbird is pugnaciously solitary

[1]The writer has had two pairs of Anthony Towhees about his acre-plot home for five years. These birds seemed beyond question to be paired throughout the year and consequently for life. At least twice during that time one of these four individuals was killed in a mouse trap, soon to be replaced by a new mate.

between nesting periods, although it, like the Blue-throated, returns to the same nest twig in successive seasons.

But even if a mate were replaced, might not the individual nesting characteristics be preserved? Does it not seem probable that a female bird normally returns to her bridal-nest locality throughout her life time, even though she habitually forms a new partnership with each successive nesting season? Uniformity in number of eggs, shape of eggs, shade of ground color, style of markings, kind of spot chosen for nest, individual taste in nest construction, could all be satisfied on this hypothesis. Possibly the death of the female would end the series, doubtless so in regard to egg characters and in species where the female alone builds the nest, but might not the surviving male often bring his new mate to the old home, particularly if she had not nested before? How much "my former mate did it this way" talk would avail is, of course, problematical, but an incident related to the writer by Major Allan Brooks indicates a certain tendency along that line. A female Cooper Hawk had been shot from her nest of eggs. Some days later another female, in adult plumage, was found incubating the same eggs, and was likewise shot. What was his surprise later to find a third female occupying the nest, this time a bird in the streaked plumage of a subadult. And as a matter of curiosity she was allowed to, and did, raise the brood.

Environment must exert an important influence on the nest. This would include availability and abundance of nest material normally acceptable within reasonable gathering distance, and, as well, the nature of adaptable sites in the neighborhood chosen for the nest. For while an adaptable site is no doubt the primary requisite to location, in the final analysis food and climatic conditions must be the determining factor, or at least the delimiting factor; and, since in many species each pair occupies its nest vicinity to the exclusion of all others of its kind, abundant population of such species would soon exhaust normal available localities where such localities were limited, and thus crowd some pairs into "unusual sites".

Then, given absence of usual nest material, or of usual nest site, or presence of attractive but unusual nest material in the locality selected, might not successive different nest builders readily display "unusual nest" characters sufficiently similar to suggest the same artist, and deceive even the most careful observer?

A striking example of environmental influence which came to the writer's attention is worth recording, though unfortunately no further data were obtained in subsequent years. A Black-headed Grosbeak, whose normal nest does not differ materially from that of the Rose-breasted, chose a rather open willow thicket some distance from other woods, and in the midst of a field of rank, green, growing wild oats, which also covered the floor of the thicket. The nest was made almost entirely of stalks including heads of the wild oat, still green, and so carelessly put together that the projecting bends and ends made a mass as big as a hat. (See fig. 10.)

It would be interesting to record how many successive seasons individually distinguishable sets and nests were found. Collecting a male here, a female there, and both parents in another place with the characteristic nest, and noting the effect on later nests, sets, and locations, would be of great value, and mating characteristics of families, perhaps of species, thus be worked out. Truly, Mr. Willard has opened up a most fertile field.

Los Angeles, California, November 1, 1918.

EVIDENCE THAT MANY BIRDS REMAIN MATED FOR A NUMBER OF YEARS

By N. K. CARPENTER

WHILE reading an article by Mr. F. C. Willard in a recent number of THE CONDOR, entitled "Evidence that many birds remain mated for life", numerous incidents were recalled by the writer tending to bear out Mr. Willard's conclusions. I have long held the same general idea as was advanced in his paper, but believe further that "separation for cause" is not by any means unknown in the bird world. It might also be stated that the instinct to return to the former nesting site is probably equally strong in both male and female. This is shown by the fact that while a certain pair of birds that nest in the same place for several years will have individual characteristics so pronounced that the location of the nest, and type of markings and shape of the eggs, can be told in advance to a certainty, as stated by Mr. Willard, there will suddenly be a change. The same location is still used, but the eggs are entirely different. A new female apparently is in possession, evidently brought there by the male of the former pair. His spouse may have died or grown too old to rear a family, but it was probably a good and sufficient reason.

The Dotted Canyon Wren (*Catherpes mexicanus punctulatus*) is one of our local species that will return to the same niche in a boulder year after year to rear a family. I have under observation one pair that was first located in 1905. The nest was on a shelf about eight inches square in the side of an immense boulder. This little pot-hole was used to my knowledge in 1905, 1907, 1908, 1909, 1910, 1911, 1913 and 1917. It was not visited in 1906 or 1912, but I have little doubt that the spot was used these years. In 1914 the birds were present, but the nest had been removed, and they had evidently decided on a change of location. It was not until 1917 that they returned to the old nook, although the birds were seen close by each year. The nest and set of eggs were taken, and the past spring (1918) the pair moved to a narrow crack about twenty-five feet away in the same boulder pile. Judging from the markings of the eggs during this period of years the male changed mates or secured a new one but once. The set always consisted of five eggs excepting upon one occasion when six were laid. April 9 was the earliest date that the clutch was found completed and April 25 the latest. Other pairs of this species that I have found in the last few years always return to the old nest if it is not disturbed, even though the set of eggs may have been taken, but the histories of these birds, so far as I know them, are short in comparison with that of the pair just cited.

Our hummingbirds also are easily watched. A Black-chinned Hummingbird (*Archilochus alexandri*) that I know of, built a nest on an electric wire within six inches of a porch light for four successive years. The current was on every evening, but the light did not seem to disturb the bird, who reared one family each season. Another of the same species has constructed its nest for the past four years under an old log bridge, for three successive seasons a new story being added to the old nest. There is a small ravine near here lined with a few stunted sycamores where several hummingbirds, both Black-chinned and Costa (*Calypte costae*) nest each year. In fact, these birds are so consistent in returning to this particular gully that we have named it Hummer Canyon.

I find the Flycatchers very persistent also. One pair of the Ash-throated (*Myiarchus cinerascens cinerascens*) has returned to the same old cavity in an oak tree for the past four seasons, while several other pairs I have watched have each nested two or three times in their own particular stump or cavity. A change by them is generally caused by the old site being destroyed. Our Black Phoebe (*Sayornis nigricans*) having once built a nest will return the following year and use it again after supplying a new lining. This I have found to be the case a number of times. I have seen nests of our Western Kingbird (*Tyrannus verticalis*) two and three stories high, indicating the number of years the nest had been used.

Mr. Willard's experience with the Cabanis Woodpecker (*Dryobates villosus hyloscopus*) is identical with mine. In 1917 I collected a set from a stump that held three other perfect excavations of previous years. This was a small dead cottonwood not over ten feet high, and though there were a great many other similar stumps in the grove, this was the only one that I could locate that contained an excavation of this species.

Our Roadrunners (*Geococcyx californianus*) lay in their chosen cactus patches each year and I have taken as many as three sets from the same nest in successive years. The Raven (*Corvus corax sinuatus*) can be counted on to return to the old home each year, but if disturbed a new nest is usually built the next spring in another ledge or crack nearby.

Members of the sparrow family as a rule are more uncertain, although they return to the same general locality. This is due, I think, to the nature of the location where their nests are placed; for, if substantial forks or hollows were used, I believe we would find the birds returning to the identical spot on successive years. To illustrate the point: Some eight years ago I ran across a few clumps of bunch-grass growing on the side of a steep ravine, under one of which was a slight depression in the hard decomposed granite soil. This was almost hidden by the overhanging grass, and a number of broken eggshells of the Valley Partridge were lying about, showing that a family had been raised there. It appeared to be an ideal spot for the home of a Rufous-crowned Sparrow (*Aimophila ruficeps ruficeps*). Each year, when in this locality, I examined the spot, but not until 1917 was I rewarded. That year the cavity contained a nest and four young of this sparrow. The past spring I was on the ground early, and sure enough the site held a nest and four eggs of the species.

I find the Least Vireo (*Vireo belli pusillus*) very persistent in returning to the same clump of trees to nest, and have taken several sets within a foot or two of the spot where the nest of each previous year had been suspended.

The Plain Tit-mouse (*Baeolophus inornatus*) offers a good study along this line. While living at Palo Alto some years ago I had a pair that laid nicely spotted eggs, and I was able to collect two sets on successive years from this pair. The nest each time was built in the same cavity of a live oak. You can be sure that I would return and look at that hollow if I ever were near Palo Alto at the proper season, although the last set I took was ten years ago.

The Raptores offer the best and most easily followed of any of the orders. A pair of Golden Eagles (*Aquila chrysaetos*) I have in mind was watched quite closely for eighteen years. The female of the pair when first encountered was quite old and very white. After a number of years the type of eggs suddenly changed and a dark colored bird was found in possession of the home. The old female can still be seen hunting by herself just off the old range, being easily

identified by the large number of white feathers. She has been divorced for the past ten years and is apparently living a single life.

Many other species and pairs could be cited, but as yet we have only circumstantial evidence on which to base the conclusions set forth in the first paragraph.

Escondido, California, November 15, 1918.

PARASITISM OF NESTLING BIRDS BY FLY LARVAE

By O. E. PLATH

DURING the summer of 1913, while studying bird life in and about Berkeley, California, I fed up some fifty to sixty wild-taken nestlings which included the following species: California Purple Finch (*Carpodacus purpureus californicus*), California Linnet (*Carpodacus mexicanus frontalis*), Willow Goldfinch (*Astragalinus tristis salicamans*), Green-backed or Arkansas Goldfinch (*Astragalinus psaltria hesperophilus*), Lawrence Goldfinch (*Astragalinus lawrencei*), and Lazuli Bunting (*Passerina amoena*). In most instances these nestlings were taken a few days before they were full-fledged, together with nest and surrounding branches. Before being taught to eat by themselves, they were fed by means of a curved stick in bird fashion, that is to say not forcibly, but by making them realize that they could get food from the beak-shaped end of the stick as they did formerly from the beaks of their parents. This method of feeding usually extended over a period of from several hours to several days, depending upon the age and intelligence of the nestlings.

After having succeeded in feeding up several broods without loss, I attempted to rear a nest of five Green-backed Goldfinches, but despite the fact that all five ate readily from the stick, all but one died in a few days. On taking this nest of goldfinches, I had noticed that two or three of the nestlings had swollen eyelids, in some cases swollen to such an extent that it was impossible for the nestlings to open their eyes. Just previous to this time I had contracted a severe case of oak poisoning while roaming through the underbrush in the canyons and along the creeks, and thought that perhaps the nestlings might be afflicted with the same malady. While feeding them, I had noticed furthermore that their mouths were considerably paler than those of the birds which had been fed up previously. They also appeared less vigorous and did not exhibit the same ravenous appetite which healthy nestlings show. Their mouths became paler and paler and within two or three days four of the nestlings died, as I have already mentioned, and even the remaining one looked as though it would not live long. In order to keep it warm, I removed it from the nest and placed it in some warm woolen cloth. To my surprise I noticed a number of maggots, similar in size and form to bumble-bee larvae (about 1.5 cm. in length and 0.5 cm. in width), crawling about in the nest. Upon picking the latter apart, I found some twenty or thirty of these maggots. They were creamy white in color and the anterior end of the alimentary canal of a number of them contained a bright red substance which changed to a blackish brown color in the posterior part of the intestinal tract. The other maggots contained the same blackish brown substance, but not the red.

The pale mouths and ultimate death of the nestlings were no longer a mystery. They had been gradually bled to death by the maggots. I regretted the unhappy fate of the young songsters and avenged them as best I could by killing the maggots, thinking that this form of parasitism was no doubt generally known to zoölogists. The surviving nestling soon recuperated and later became a great pet of the family.

Intermingled with the lower part of this infested nest there was a mass of a sticky, dark brown substance reminding one of clotted blood. Evidently this material either was the faeces of the maggots or coagulated blood which had trickled from the wounds made by the maggots, but as I could find no trace of wounds on the birds, I concluded it to be the former.

About two weeks later I found the nest of a Willow Goldfinch containing four young ones, some of which showed the same symptoms as the Green-backed Goldfinches which had died. Suspecting that this nest also might be infested by maggots, I transferred the four nestlings to another nest and closely examined their own nest. I found the same state of affairs as in the previous infested nest, with the exception that some of the maggots had already pupated. These pupae were of a light brown color and somewhat smaller than the maggots, being about 1.0 cm. in length and 0.5 cm. in width. Both maggots and pupae were destroyed as in the first case. The swelling of the eyelids soon disappeared and I had no difficulty in rearing this brood of goldfinches; but one of the young birds turned out to be entirely blind so that it had to be killed. Two others were blind in one eye, whereas the fourth was normal. Two of these birds lived in captivity for several years.

Later in the summer I met Dr. C. A. Kofoid, head of the Zoölogical Department of the University of California, and told him about the maggots and the pupae. He regretted that I had destroyed them and suggested that I look into this matter more closely the followng summer. It was impossible for me to do this, however, until the summer of 1917. The period of investigation which I am now about to discuss, extended from the latter part of June, 1917, until about the middle of September. The work was carried out under the supervision of Professor W. W. Cort, of the Department of Zoology of the University of California, to whom I am indebted for a number of important suggestions.

My first task was to see whether or not I could find any maggots. Since both infested nests had been those of goldfinches, I tried to locate as many of these nests as possible. Incidentally I also kept an eye on nests of other birds which I chanced to run across. My efforts were quickly rewarded. The first nest examined, that of a Nuttall Sparrow (*Zonotrichia leucophrys nuttalli*), contained thirty-six full-grown maggots like those encountered in the summer of 1913, and thereafter I found them in about two out of every three nests.

To my surprise none of the young birds from these infested nests showed any eye trouble; nor did they, in the first few instances, seem to have fared any the worse in other respects from the presence of the maggots. Equally surprising was the fact that no red appeared in any of the maggots taken from the first few nests, but merely the dark brown substance in the posterior part of the intestine. Ninety of the most vigorous maggots, selected from 154 full-grown individuals taken from the nest of a California Linnet, whose five full-fledged young showed no noticeable pernicious effects from this large number of creeping vermin, were placed in a Green-backed Goldfinch nest containing three young which were about four or five days old, and developments observed from day to day.

One of the nestlings died about two days later. Though it seemed plausible that death had been caused by the maggots, a post-mortem examination furnished no absolute proof for this assumption. The other two nestlings seemed to be considerably retarded in their growth, but finally left the nest. After the departure of the young, only forty-three of the ninety maggots were recovered from the nest, some of them in the form of pupae, showing that many of them had evidently lost their bearings and fallen out of the nest. None of them showed any trace of red. These facts made my former conclusions, that these maggots were blood-sucking parasites, appear doubtful.

About this time I was observing two California Linnet nestlings. Despite the fact that there were only two young instead of from three to five, as is usually the case, I noticed that they were growing very slowly and that they lacked the same vigor and liveliness usually exhibited by this species of bird. When I finally succeeded in getting them to take wing, I obtained fifty-four maggots from their nest, many of which showed the sought-for red substance similar to that observed in 1913. These maggots were only about two-thirds the size of those taken from the first few nests, but to all appearances belonged to the same species.

At the laboratory several of the maggots with the red substance in them were decapitated and smears made from this red material which was then examined under a high power microscope. The red substance proved to be fresh vertebrate blood which of course could only have been obtained from the birds inhabiting the nest. But in order to prove this beyond a doubt, a number of additional experiments were carried out.

A few days later I obtained twenty exceedingly small maggots from a California Linnet nest just vacated by its feathery occupants. Although only about one-fourth grown, every one of them showed traces of fresh blood. All twenty were placed in the nest of a Green-backed Goldfinch containing three young about ten days old and the latter observed from day to day. Nothing extraordinary happened, excepting that the three nestlings seemed to be rather weak when they left the nest about two weeks later. When the nest was picked apart, all twenty maggots were recovered. They had meanwhile reached full growth. None of them however showed any trace of blood, but merely the usual dark brown substance in the posterior end of the intestine. These facts tend to indicate that the maggots are voracious feeders during the earlier period of their existence, but that they refrain from taking food after they have attained full growth.

As probable as it seemed that the vertebrate blood found in the maggots was avian blood obtained from the nestlings, this had not yet been absolutely proved, since I had never seen any of the maggots attached to the nestlings. Moreover my experiments up to that time, due to the difficulty of closely observing nestlings of wild birds in the open, had naturally been somewhat superficial. In order to remedy this difficulty, I decided to use a brood of tame canaries for subsequent experiments. I succeeded in securing a female bird with two nestlings about a week old, but both young died within a few days, probably because they had taken cold while being transferred to my room. For these I substituted four, nearly full-fledged Green-backed Goldfinches. The old bird seemed to notice the deception, but when she saw the four open, hungry mouths, she adopted the strangers as her own. A few days later I selected from some 200 maggots, forty of the most active ones and placed them on the young birds. The maggots

had been without food for a number of days and many of them were only half grown.

At first the nestlings showed some uneasiness by shaking themselves, but this only lasted for a minute or two, after which they again came to complete rest. They were observed from time to time until about 8:30 in the evening, but there was nothing unusual in their behavior. At about three o'clock the next morning I was suddenly awakened by a thud in the cage. My first thought was that the mother bird had become frightened and had jumped from the nest; but when I looked, I found one of the nestlings down below. I was still more surprised to see the others, including the old bird, sitting on the rim of the nest and not huddled closely together in the center. When I picked up the nestling which had leaped down, I noticed two maggots crawling about at the bottom of the cage, but upon examination found no maggots on the bird itself. The two maggots which had been dragged down by the nestling—it being impossible for them to get out of the nest-box in any other way—were not full-grown and were gorged with blood. Thereupon the four remaining birds were carefully examined.

I now saw what I had been expecting to see: A number of maggots were clinging to the feet and lower parts of the body of each one of the nestlings. None were found on the mother bird. Most of these maggots released their hold while the birds were being examined, but some of them had to be forcibly detached. These, like those found at the bottom of the cage, were not full-grown but were filled with fresh blood. No marks, visible to the naked eye, could be seen where the maggots had pierced the skin of the birds, nor were any traces of blood apparent. This was conclusive proof that the sticky material found at the bottom of infested nests is not coagulated blood which has dripped from the wounds made by the maggots, but faeces deposited by the latter. The four nestlings were then transferred to another nest and their own carefully examined. Sixty-eight maggots were taken from the nest, showing that the nest had originally harbored twenty-eight. More than half of the sixty-eight maggots showed traces of fresh blood, the smaller ones being most gorged. The soft cotton lining of the nest-box was then removed and carefully examined, but no additional maggots were discovered. Thereupon the box was refilled with cotton and the nestlings put back. The latter now appeared completely at ease. They again huddled closely together as formerly, the mother bird sitting on them during the night.

During the next few days a number of other experiments were carried out with this brood of goldfinches. While one of them was being held in the hand a few vigorous, half-grown maggots were placed among the nestling's feathers. After crawling about among them for a brief period, the maggots would invariably drop from the bird. One evening several dozen half-grown, hungry maggots were placed in a pasteboard box and covered with a layer of soft cotton about an inch thick. Two of the nestlings were then transferred to this box and the latter covered up. In less than ten minutes eight or nine of the maggots were found firmly attached to the nestlings, ingesting blood, only a few releasing their hold while the birds were being examined. This same experiment was tried the following afternoon, but, strange to say, none of the maggots were attached to the birds. But when this experiment was repeated the same evening, and on subsequent evenings, some maggots were again found clinging to the nestlings. This indicates that they do their deadly work at night and rest in the lower parts of the nest during the day. It is interesting to note that both of the nestlings which

were used for these experiments died several days later, apparently from loss of blood.

During the eleven weeks over which this investigation extended, the maggots and the resulting flies, since identified as the larvae and adults of *Protocalliphora azurea* (Fallen) by Mr. C. W. Johnson, curator of the Boston Society of Natural History, were studied carefully. These larvae were kept in pasteboard boxes, in some of which soft cotton or bird nest material was placed. They crawled about vigorously until they reached a dark place, the crevices between the layers of paper of the boxes being their favorite resting place.

In these pasteboard boxes various organic substances were placed, such as fruit, bread, meat, and boiled potato. Although the fly larvae crawled through some of these substances, they fed upon none of them. One day I secured a large bone containing many blood cavities. Among these blood cavities I bored several holes with my penknife and placed the bone in a box containing several dozen fly larvae. The latter had been starved for about a week so that there was not the slightest trace of food left in their intestines. The next morning I found two or three of them with fresh traces of blood in their alimentary canals, conclusive evidence that they had been feeding upon the ox blood contained in the bone. One day, having accidentally cut myself, I put several drops of blood in the palm of my hand and placed several larvae near it, but the latter invariably crawled in the opposite direction as soon as they came in contact with the blood. Similar experiments with ox blood brought the same results. This seems to indicate that the larvae require a firm object to which they can attach themselves before they make any attempt to ingest blood.

Larvae which had not reached their full growth when taken from nests invariably died, unless they could feed upon blood. On the other hand full-grown larvae always pupated, even if they had no access to food of any kind. This shows that the larvae of *Protocalliphora azurea* are absolutely dependent upon blood in order to mature.

The blood ingested by the larvae is stored in a kind of reservoir, the diverticulum, which branches off from the esophagus close behind the pharynx and there retains its red color for three or four days, gradually passing into the posterior end of the intestine as a dark brown substance which appears as a longitudinal streak in the middle of the animal's body. If the larvae are not fed, this streak is gradually discharged as faeces so that after five to seven days more, the larvae become creamy white in color throughout. From this we may infer that it is not necessary for the larvae to replenish their supply of food at frequent intervals to attain full growth.

When the larvae are about to pupate, they crawl, anterior end downward, into the sticky mass at the bottom of the nest and there sometimes form a kind of disk, the lower side of which is made up of the anterior ends of the larvae, and the upper side of the posterior ends. About two weeks after pupation, the young flies emerge from the lower side of the disk. The whole thing reminds one somewhat of the state of affairs in wasp nests. Here too the young wasps emerge from the lower side of the disks. In captivity the fly larvae, before they pupate, usually attach themselves to objects located in dark places by means of a viscous fluid which solidifies a few moments after it has been discharged.

One thing which surprised me very much was the power of resistance which these larvae showed. Several of them, after having been immersed in a 70 per-cent alcohol solution for twenty-four hours, were still wriggling vigorously. Sev-

eral others which were being prepared for dissection were placed in a fixing fluid for six hours, then washed in a 50 percent alcohol solution and placed in one of 80 percent. They were still alive two days later and it was necessary to resort to a stronger fixing fluid (Gilson's) to prepare them for dissection. Other larvae were placed in a very strong insect powder, but they remained alive in it for two or three days.

As soon as the larvae pupated, the pupae were placed beneath inverted tumblers. After the flies emerged from the pupae they were kept in a large, narrow-mesh cage and carefully studied. It may be of interest to state that the flies (about 1500), practically without exception, emerged from the pupae between seven o'clock in the morning and two o'clock in the afternoon. Upon emerging they were of a slightly lighter hue than the adult of our Common House-fly (*Musca domestica*), their wings being shriveled up, but after about an hour or so these straightened out and the young flies assumed the dark blue, metallic lustre of adult *Protocalliphora azurea.*

Various kinds of food were placed before these flies, such as milk, crushed fruit, cheese, and meat in various forms. The flies readily ate the milk and fruit, especially if the latter was placed on the cage wire instead of the cage floor, but they were rather indifferent to the meat and the cheese. Although some of the flies were kept in the cage for six or seven weeks, none of them, to my knowledge, deposited eggs or maggots.

One day I noticed a number of very small, bee-like insects, since identified as *Nasonia brevicornis* by Professor Brues of Harvard University, flitting about in one of the inverted tumblers. I wondered where they had come from, but thinking that they had perhaps got into the tumbler accidentally, I let them escape. To my surprise I found some twenty or thirty more of them under the same tumbler the following day. Upon investigation, I found one or two small holes of about the size made by an ordinary stick-pin in several of the pupae. I could easily tell by the weight of the latter that they were empty. This gave me a clue. I opened a number of the pupae and there found these little insects, more commonly known as Chalcid Flies, in several stages of development: as white, inactive maggots; as creamy, pink-eyed larvae, already showing their insect form; and as full-grown insects which came swarming out as soon as the fly pupae were opened. I counted the Chalcid Fly larvae from a dozen pupae and found them to vary in number from about fifteen to twenty-five per Muscid pupa. In all these cases the embryo fly had been completely devoured.

Some forty or fifty of these Chalcid Flies were then transferred to an inverted aquarium jar below which a hundred Muscid pupae were placed. The Chalcid Flies seemed to be perfectly at home among these pupae, crawling about among them as do bumble-bees among their honey-combs. Within a few weeks hundreds upon hundreds of young Chalcid Flies emerged from the Muscid pupae; less than a dozen *Protocalliphora* hatched, the remaining ones having been parasitized by the *Nasonia.*

In some of the infested birds' nests, I had noticed a number of small grubs, similar in size and form to those found in almonds. As in the case of the Chalcid Flies and the larvae of the *Protocalliphora*, I paid no attention to them at the beginning, but when they occurred repeatedly, I began to suspect that they might have some relation to one or both of the other insects. I therefore collected some fifty or sixty of these grubs and placed them among a large number of Muscid pupae, many of which were parasitized by Chalcid Flies, and watched

developments from day to day. I found that these grubs fed upon the pupae, eating shell and all, and apparently being quite indifferent as to whether the pupae contained Chalcid Fly or Muscid larvae.

From these grubs several species of moths hatched. A few living specimens of these moths were turned over to Professor Wheeler of the Bussey Institution for identification, together with some *Nasonia brevicornis* and *Protocalliphora azurea*. It was necessary to send the moths to the United States Bureau of Entomology at Washington, where they were partially identified by Mr. Carl Heinrich. Among them were two species of *Tinea*, one of which was definitely identified as *Tinea occidentella* (Chambers). There was only one specimen of the other species and that was too badly rubbed for specific determination. A specimen of another species proved to be an Oecophorid, probably *Endrosis lacteella* (D. & S.), or a closely related species, but also too badly rubbed for exact identification. Several of these moths were retained for the United States entomological collection by the entomologists at Washington.

It will now perhaps be of interest to ornithologists and entomologists, as well as to bird lovers in general, to state how frequently the larvae of *Protocalliphora azurea* were encountered in birds' nests and what effect their blood-sucking habit has on the nestlings. During the eleven weeks in which these experiments were carried on, no less than sixty-three nests, representing six species of birds, were examined. Of these, thirty-nine, or nearly two-thirds, were infested by blood-sucking fly larvae. The following tables will help to illustrate.

TABLE I

Species of bird	Nests examined	Infested nests	Uninfested nests	Percentage of infestation
Nuttall Sparrow	4	4	0	100
California Purple Finch and California Linnet	31	21	10	67
Green-backed Goldfinch	13	8	5	61
Willow Goldfinch	7	4	3	57
California Brown Towhee	8	2	6	25
Totals	63	39	24	61 (Average)

TABLE II

Species of bird	Larvae in each nest	Totals	Larvae per nest
California Purple Finch and California Linnet	8, 10, 14, 15, 17, 20, 23, 29, 50, 52, 54, 60, 62, 71*, 86, 94, 103, 103, 106, 108, 154.	1239	59
California Brown Towhee	44, 62.	106	53
Willow Goldfinch	13, 24, 34, 81.	152	38
Nuttall Sparrow	24, 36, 36, 37.	133	33
Green-backed Goldfinch	13, 18, 19, 21, 28, 30, 35, 50.	214	26
Totals		1844	47 (Average)

*A considerably smaller, but apparently more deadly species than *Protocalliphora azurea* (Fallen).

From the first table it will be noticed that birds which build a rather compact nest, for example the goldfinches and the linnets, show a considerably larger proportion of infection than those which construct nests of a looser texture, as for instance the California Brown Towhee. This may possibly be due to the

fact that it is difficult for the fly larvae to keep from falling out of loosely constructed nests.

All of the 1844 larvae in Table II, excepting the seventy-one indicated by the starred foot-note, were those of *Protocalliphora azurea*. These seventy-one larvae were taken from a linnet nest which contained the skeletons of three young which had been overtaken by death just before they became full-fledged. Death had undoubtedly been caused by the larvae. When the latter were discovered, they were in their pupal stage and were considerably smaller than the larvae of *Protocalliphora azurea*. All of them, excepting about a dozen, had hatched. These unhatched pupae were guarded very carefully, but they all proved to be parasitized by *Nasonia brevicornia*.

The death of six other nestlings, including the four which had died in 1913, could be traced with more or less certainty to the Muscid larvae, as in the case of the three linnets whose skeletons I found, and the two goldfinches used for experimenting. One of these nestlings, a nearly full-fledged California Linnet, was discovered when it had been dead only a short time. A number of the *Protocalliphora* larvae had actually penetrated into its body. The nest in which this dead bird was found contained another nestling of the same brood. Though apparently rather weak, this nestling took wing when I approached the nest. Nearly all of the fly larvae found in this nest showed traces of fresh blood.

It was not until after I had completed my investigations that my attention was called to two articles concerning blood-sucking fly larvae[1]. As far as I am able to ascertain, these are the only two instances of blood-sucking fly larvae on record as far as North America is concerned. In the second of these two articles Coutant mentions four papers (those by Dufour, Du Buysson, Rouband, and Rodhain) concerning blood-sucking fly larvae in Africa, South America, and Europe, but neither the Harvard University Library nor the Boston Public Library contain any of these four articles.

In 1908 Henshaw (*loc. cit.*) recorded the infestation of two successive broods of Bluebirds (*Sialia sialis*) by the larvae of *Protocalliphora chrysorrhea* (Meigen), which had been reported to him by Mrs. Emma F. Everett, of Wellesley Hills, Massachusetts. These two cases of parasitism were decidedly fatal, seven out of the eight nestlings dying as a result. Henshaw closes with a note of warning about the danger of this insect pest to our native birds.

Seven years later Coutant (*loc. cit.*), while studying blood parasites of the Common Crow (*Corvus brachyrhynchos*) at the Biological Laboratory of Cornell University, came across some larvae of *Protocalliphora azurea*. Most of his deductions, based upon the study of these larvae, are well founded. His conclusion however (*loc. cit.*, p. 139) that "the larvae prefer rather dry places to moist ones and are therefore not accustomed to living in decomposing or fecal material" and that (*loc. cit.*, p. 143) "the larvae when ready to transform, apparently leave the more occupied parts of the nest in the vicinity of their food-supply and seek a dry . . . portion" of the nest, were not borne out by my observations and experiments. In all cases the larvae preferred the moist faecal material and pupated in it. This discrepancy between Mr. Coutant's results and mine is undoubtedly due to the fact that Mr. Coutant based his conclusions upon the study of a comparatively few larvae, and that even these few were not studied by him in their natural environment, the bird's nest.

[1]a. Henshaw, H. W. A Parasitic Fly Injurious to our Native Birds. The Auk, xxv, 1908, pp. 87-88. b. Coutant, Albert F. The Habits, Life History, and Structure of a Blood-sucking Muscid Larvae (*Protocalliphora Azurea*). Journal of Parasitology, vol. I, 1915, pp. 135-150.

Commenting upon the fact that *Protocalliphora azurea* is recorded by collectors and dipterologists as "rare" or "very rare" and that specimens of this fly are only to be found in the larger museums and collections, Coutant correctly assumes (*loc. cit.*, pp. 144, 145) "that they are not so rare as is generally supposed, but that the adults are peculiar in their habits, flight, etc., and for this reason are rarely taken". He then goes on to say (*loc. cit.*, p. 145): "Few collectors, I imagine, have taken insects very often from the zone of air from fifty to one hundred feet above the ground, in the woods; yet from the habits of the larvae, this is where we would naturally expect that the adults would occur". This is probably correct, but the lower limit, as well as the lateral, will have to be extended considerably. Most of the thirty-nine infested nests taken during the course of my experiments, as well as the two encountered in 1913, were found far distant from forests and all of them came from a height of three to fifteen feet above the ground.

Turning now to the effect which these blood-sucking larvae of *Protocalliphora azurea* have on nestling birds, my observations seem to warrant the following conclusions: (1) that from 5 to 10 percent of the parasitized nestlings die from loss of blood; (2) that some of the parasitized nestlings which do become full-fledged are so weakened by the loss of blood that they fall an easy prey to rapacious animals; (3) that the larvae of *Protocalliphora chrysorrhea* are probably more deadly to nestling birds than those of *Protocalliphora azurea.* The last conclusion seems to be borne out by the case of parasitism recorded by Henshaw (*loc. cit.*, pp. 87-88), where there was a fatality of nearly 90 percent instead of one of only 5 to 10 percent.

Much remains to be done along this line of investigation in order to determine how large and universal the damage is which is wrought on our continent by this insect pest. Although the adults of both *Protocalliphora azurea* and *Protocalliphora chrysorrhea* are very rarely taken by collectors (*cf.* Henshaw, *loc. cit.*, p. 88; Coutant, *loc. cit.*, pp. 144-145), my investigations prove conclusively that the former is not so rare, at least not in certain parts of the country. So far, however, only forty-four birds' nests, infested by the larvae of one or the other of these flies, have been recorded. All forty-four of these infested nests were found at three places, one near Ithaca, N. Y. (Coutant, *loc. cit.*), two at Wellesley Hills, Mass. (Henshaw, *loc. cit.*), and the remaining forty-one in the San Francisco Bay region. It would be highly interesting, and perhaps for the benefit of our wild birds, if bird students in other parts of the United States, as well as in Canada and Mexico, would thoroughly investigate this matter in their home districts.

Massachusetts Institute of Technology, Cambridge, Massachusetts, May 7, 1918.

FROM FIELD AND STUDY

The Costa Collection of Birds.—In The Condor for May, 1918, pages 114-116, Dr. T. S. Palmer has carefully reviewed the early history of *Calypte costae*, and ends with the phrase, "The Costa collection of hummingbirds, the fate of which is now unknown." Adolphe Boucard in his "Genera of Humming Birds," London, 1893-1895, under *Calypte Costae*, page 5, states: "This fine species was dedicated to Marquis Costa de Beauregard, who was a very enthusiast[ic] collector, and had in his time one of the finest collection[s] of Humming Birds. . . . I bought his collection in 1878, and I found among many rare species, what I consider as the types, male and female of this species."

Boucard, who was one of the ablest of French ornithologists and the last of the great natural history agents who made Paris their headquarters in the nineteenth century, moved to London I think in 1889, where I frequently saw him in the years 1889-1891, at his natural history agency in High Holborn. He made two notable donations of the greater part of his ornithological collection to the Paris Museum, the first I think in 1895, and the last in 1904, a few months before his death. It is probable the supposed types of *Calypte costae* were in the first donation, as Boucard had then finished his "Genera of Humming Birds."

In the Atlas, "Voyage de la Frégate la Vénus," Bourcier's types are figured (Oiseaux, pl. 2, figs. 1, 2), in colors from a painting of the male and female by Oudart.—J. H. Fleming, *Toronto, Ontario, October 25, 1918.*

The Wilson Phalarope in the San Diegan Region.—An adult male of the Wilson Phalarope (*Steganopus tricolor*) was taken at Nigger Slough on September 16, this year (1918). The species has been recorded from Santa Barbara at sea level, otherwise its occurrence in the low country of the San Diegan region is quite worthy of note. The bird was alone, though Northern Phalaropes came and went from time to time. The plumage is the quiet gray of winter with some persisting wing quills that were worn. The testes were well defined but shrinking in size. This completes the roster of the American phalaropes that I have taken this September in the low country of this region. —Loye Miller, *State Normal School, Los Angeles, California, September 23, 1918.*

Nesting of the Western Willet in California.—In a recent conversation the Editor of The Condor called my attention to the fact that there is only one definite record of the breeding of the Western Willet (*Catoptrophorus semipalmatus inornatus*) within the state of California. This is based upon sets of eggs collected by N. R. Christie, near Beckwith, Plumas County, many years ago. It, therefore, seems well worth while to record the taking of additional eggs of this bird within the state.

During June and July, 1918, Dr. Barton W. Evermann, Mr. Joseph R. Slevin and myself made a long collecting trip by automobile, covering some 1800 miles, through northern California and southern Oregon. In early June we spent several days at a partially flooded mountain meadow known as Grasshopper Meadow or Grasshopper Lake. This is situated in Lassen County about five miles from Eagle Lake.

Grasshopper Lake is very shallow. The relative proportion of lake and meadow varies much from time to time, according as the season is one of more or less moisture. Together they cover many hundred acres. At the time of our visit the immediate shores of the lake were wide mud flats with a scattering, sprawling growth of a thick-stemmed, ragged, more or less vine-like "red-weed". Farther from the lake were meadows of sedges and grasses and a wide belt of yellow primroses, and then rolling hills covered with sage-brush.

As we reached the mud flats a number of large birds with very conspicuous white wing-patches rose in the air and, with loud cries, came driving toward us, passed, wheeled and came again and again, in very much the manner of an Avocet. There seemed to be no reason to doubt that they were the Western Willet, but, to make identification certain, one was shot. There seemed to be about six or eight or perhaps ten pairs here, and later we saw four or five more pairs in another part of the meadow several miles away. We succeeded in finding five nests. On June 1 Dr. Evermann found two nests, with one and two fresh eggs, and on June 6 I found three nests, one empty, one with four broken

eggs, and one with four eggs in which incubation had begun. The nests were made of pieces of weeds rather carelessly built up on the mud. Some were found where the water was a few inches deep and some where the mud was drying. The one with broken eggs was on a clump of "red-weed" where the receding water had permitted complete drying. The broken eggs apparently had been eaten by some mammal or bird.

The sets of one and two eggs collected by Dr. Evermann are now in the collection of the California Academy of Sciences. The set of four is in my collection.—J. Van Denburgh, *San Francisco, December 6, 1918.*

Nighthawk Observed in San Francisco.—On the evening of September 18, 1918, I happened to be standing at my bedroom window, on the upper floor of the house, absent-mindedly looking at the sky, when what appeared for the moment to be a far distant but exceedingly erratic sea-gull came above the horizon and at once attracted my attention. Numerous gulls had been flying over without especial notice, but this individual seemed to have gone crazy as it flew into the west, or else was forgetting how to fly. Just when it nearly disappeared from view it suddenly turned and flew back almost directly overhead, disclosing the fact that instead of being a gull it was a nighthawk. The white wing bars were visible, yet it was not possible to locate their position accurately enough to state the species, but it was presumably a Pacific Nighthawk (*Chordeiles minor hesperis*). On looking at my watch it was exactly 7:20 P. M. The incident was noted down as a matter of interest and as a record of date.

Three nights after this, that is, on September 21, I happened to be at the same window at the same moment, and across the sky flew the same, or another, nighthawk, again proceeding westward. This time it did not turn, but disappeared in the western sky. I went out into the street to have a wider view, but saw nothing further. Impressed by this repetition the next evening saw me early in the street, and on the lookout for more developments. At precisely 7:21 a nighthawk appeared in the east and pursued the same course as before, again disappearing toward the ocean. Each time the bird's course was about over and parallel with Pacific Avenue or Broadway. The next few evenings were foggy or lowering and the bird was not seen again.—Joseph Mailliard, *San Francisco, October 1, 1918.*

Notes on Red-headed Woodpecker and Jack Snipe in New Mexico.—In a recent issue of The Condor were published notes made by several New Mexico ornithologists on the occurrence of the Red-headed Woodpecker (*Melanerpes erythrocephalus*) in this state. It was pointed out that all the birds so far observed had been on or near transcontinental railway lines, indicating that the movement across treeless plains had followed the lines of telegraph poles. It might be of interest to add that on August 18, 1918, at a point about four miles north of Albuquerque, and within a quarter of a mile of the main line of the Santa Fe Railway, I observed an additional adult Red-head. I approached within twenty feet of the bird so that there can be no question whatever of identification.

On the same day I also observed four Jack Snipe (*Gallinago delicata*) in the same locality. These birds were so tame and unsuspecting that I was led to believe that they had been raised in the locality. I do not know whether Jack Snipe have been known to breed at this altitude (5000 feet) in New Mexico, but this record indicates that they may be found here during the breeding season.—Aldo Leopold, *Albuquerque, New Mexico, August 21, 1918.*

Nesting of the Band-tailed Pigeon in San Diego County, California.—I have recently received an egg of the Band-tailed Pigeon (*Columba fasciata*) taken on Palomar Mountain, San Diego County, on October 11, 1918. This was perfectly fresh and was the only egg in the nest, which was situated in a post-oak near the side of a road and was twelve feet above the ground. The average of 13 eggs given by Bendire is (as reduced from millimeters to inches) 1.57x1.13. His largest egg measured 1.72x1.20. This egg of mine measures 1.93x1.07.

I have the report of another egg taken in the same locality on October 14, incubation commenced. This, also, was in an oak about twelve feet above the ground. The

nest was unusually large, about 18 inches top diameter, 3½ inches thick; perfectly flat, no hollow. Elevation about 5000 feet above sea-level.

My informant tells me that the Pigeons are very numerous on Palomar Mountain and he believed that there were several more pairs nesting. He says the acorn crop is unusually large this year and that the elder and cascara bushes are loaded with berries, on both of which the pigeons largely feed. Probably the plentiful food supply and a warm open fall account for the late nesting. Possibly the fall may be the best time to find them nesting anyway. They are scarce enough in the spring and summer.—C. S. Sharp, *Escondido, California, October 27, 1918.*

Recent Additions to the California State List of Birds.—There was enumerated as of full standing in the 1915 "Distributional List of the Birds of California" (Pacific Coast Avifauna number 11) a total of 541 species and subspecies. Up to December 20, 1918, there have been no adequate reasons advanced for removing any one of these 541 forms from regular standing. On the other hand, there has been a total of 23 additional forms given full standing as birds of California on reasonably convincing grounds. These 23 additions are listed below, each with citation to place of proposal. It must be kept in mind that mere changes in names do not figure here—only distinct species or subspecies not included in the main 1915 list under any name whatsoever.

1. *Thalassogeron culminatus* (Gould). Yellow-nosed Albatross. This name is restored from hypothetical status because the determination of the skull upon which the earlier record was based has been authenticated. (See Loomis, Proc. Calif. Acad. Sci., 4th ser., II, 1918, pp. 84-85.)

2. *Oceanodroma leucorhoa kaedingi* Anthony. Kaeding Petrel. (See Miller, Condor, xx, 1918, p. 211.)

3. *Anser albifrons gambeli* Hartlaub. Tule Goose. (See Swarth and Bryant, Univ. Calif. Publ. Zool., xvii, 1917, pp. 209-222, pl. 13.).

4. *Numenius americanus americanus* Bechstein. American Long-billed Curlew. (See Oberholser, Auk, xxxv, 1918, pp. 189-190.) Oberholser ascribes *two* races of the Long-billed Curlew to California, of which *Numenius americanus occidentalis* is the more essentially western form and the one to which most previous records probably belong.

5. *Astur atricapillus atricapillus* (Wilson). Eastern Goshawk. (See Grinnell, Condor, xix, 1917, p. 70.) Doubts have been expressed by L. B. Bishop and by P. A. Taverner as to the existence of two races of goshawk in America; but so far no adequate treatment of the problem has been published.

6. *Glaucidium gnoma pinicola* Nelson. Rocky Mountain Pigmy Owl. (See Grinnell, Condor, xx, 1918, p. 86.)

7. *Dryobates villosus leucothorectis* Oberholser. White-breasted Woodpecker. (See Grinnell, Condor xx, 1918, p. 86.)

8. *Selasphorus platycercus* (Swainson). Broad-tailed Hummingbird. Restored from hypothetical status. (See Swarth, Condor, xviii, 1916, p. 130; Grinnell, Condor, xx, 1918, p. 87.)

9. *Muscivora forficata* (Gmelin). Scissor-tailed Flycatcher. (See Swarth, Condor, xvii, 1915, p. 203.)

10. *Aphelocoma californica immanis* Grinnell. Interior California Jay. (See Oberholser, Condor, xix, 1917, pp. 94-95; Swarth, Univ. Calif. Publ. Zool., xvii, 1918, pp. 411, 415.)

11. *Aphelocoma californica oocleptica* Swarth. Northwestern California Jay. (See Swarth, Univ. Calif. Publ. Zool., xvii, 1918, pp. 411, 414.)

12. *Calcarius ornatus* (Townsend). Chestnut-collared Longspur. (See Grinnell, Condor, xx, 1918, p. 87.)

13. *Passerculus sandwichensis savanna* (Wilson). Eastern Savannah Sparrow. (See Clay, Condor, xix, 1917, p. 68.)

14. *Passerculus rostratus guttatus* Lawrence. San Lucas Marsh Sparrow. (See Brown, Auk, xxxiv, 1917, p. 340.) I confess that I should like to see the whole *Passerculus* category of sparrows thoroughly revised on the basis of the most careful appraisement of age, sex and seasonal variation, as well as of geographical variation.

15. *Passerella iliaca monoensis* Grinnell and Storer. Mono Fox Sparrow. (See Grinnell and Storer, Condor, xix, 1917, pp. 165-166.)

16. *Passerella iliaca brevicauda* Mailliard. Yolla Bolly Fox Sparrow. (See Mailliard, Condor, xx, 1918, pp. 138-139.)

17. *Pipilo maculatus montanus* Swarth. Mountain Towhee. (See Grinnell, Condor, xx, 1918, p. 87.)

18. *Vermivora virginiae* (Baird). Virginia Warbler. (See Grinnell, Condor, xx, 1918, p. 193.)

19. *Vermivora celata orestera* Oberholser. Rocky Mountain Orange-crowned Warbler. (See Oberholser, Auk, xxii, 1905, p. 244; Grinnell, Pac. Coast Avif., no. 11, 1915, p. 146.)

20. *Telmatodytes palustris aestuarinus* Swarth. Suisun Marsh Wren. (See Swarth, Auk, xxxiv, 1917, pp. 310-311.)

21. *Sitta carolinensis tenuissima* Grinnell. Inyo Slender-billed Nuthatch. (See Grinnell, Condor, xx, 1918, p. 88.)

22. *Penthestes gambeli inyoensis* Grinnell. Inyo Mountain Chickadee. (See Grinnell, Univ. Calif. Publ. Zool., xvii, 1918, pp. 506, 510.)

23. *Hylocichla guttata polionota* Grinnell. White Mountains Hermit Thrush. (See Grinnell, Condor, xx, 1918, pp. 89-90.)

With these 23 additions the total number of birds for California comes to 564. We are still decidedly behind Texas, with its 605 species and subspecies (see Oberholser, Condor, xix, 1917, p. 68); but we are steadily catching up!—J. Grinnell, *Museum of Vertebrate Zoology, Berkeley, California, December 20, 1918.*

A Northern Record of *Mimus polyglottos leucopterus*.—On the 28th of July, 1918, while returning by auto from a reconnaissance trip in Humboldt County, Nevada, we encountered two Western Mockingbirds on Duck Flat, at a point some miles northwest of Sunkist (formerly Duck Lake), Nevada. The occurrence was so unusual that I stopped the car and made sure of the birds' identity. The birds were straggling at some distance apart and appeared to be working their way slowly northward, fluttering from clump to clump over a luxuriant growth of sage. The record station is well above the forty-first parallel of latitude, and not more than six miles east of the California boundary line.—William Leon Dawson, *Santa Barbara, California, December 4, 1918.*

Sapsuckers and Hummingbirds.—In early June of this year (1918) I was collecting in the Moose Mountain District (southeast corner of Saskatchewan). This is a hilly district, thickly wooded, with numerous lakes and sloughs, surrounded by flat prairie—an "oasis in the desert". Near Fish Lake, each side of the trail, were a few birch trees among the poplars. I noticed that Yellow-bellied Sapsuckers (*Sphyrapicus varius*) had been at work on one of the birch-trees; some five or six rows of holes were made about twelve feet from the ground. As I looked at this tree, a Ruby-throated Hummingbird (*Archilochus colubris*) came to it, hovering in front of, and probing, the holes, feeding on the sap. I had never seen *colubris* thus feeding, and stayed at the spot a couple of hours to make observations.

Shortly a male Sapsucker came to the spot, drove away the hummingbird and commenced to feed, followed by the female who drove away her mate. Sitting partly hidden by the underbrush close to this tree, I noted that a hummingbird came, on an average, every ten minutes, a sapsucker every half hour. As I needed specimens of this usually scarce species, as well as desiring to know if it was the same two or three birds which were being attracted to this feeding place, I took (with .22 shot cartridges) six hummingbirds, four males and two females; but still others came to feed as before. This was between 8 and 10 a. m. Passing the spot on my way back about 5 p. m., I saw another, but had no time for further observations. Examination of the birds taken showed no signs of minute insects, but considerable clear liquid came from the mouth, which satisfied me the hummingbirds were *actually feeding on the sap.*—H. H. Mitchell, *Provincial Museum, Regina, Saskatchewan, October 25, 1918.*

Western Golden-crowned Kinglet in Los Angeles.—On November 27 of this year (1918), I picked up in my yard in the city of Los Angeles an adult male Western Golden-crowned Kinglet (*Regulus satrapa olivaceus*). From time to time during the past five weeks, the notes of this species have been heard in the locality, but no view of the birds was obtained until the above date when three times during the morning a small flock of them visited the premises, feeding in oak and sycamore trees. The elevation here is 500 feet above sea-level and constitutes the lowest point at which I have ever observed the species so far south as Los Angeles.—Loye Miller, *State Normal School, Los Angeles, December 10, 1918.*

EDITORIAL NOTES AND NEWS

It may not be amiss here to call attention to the fact that the lists of proposed changes in nomenclature of North American birds now being published from year to year in *The Auk* are not to be considered authoritative; in other words, they do not in any sense replace the Supplements formerly issued by the A. O. U. Committee on Nomenclature. As stated by the editor of *The Auk*, himself, in a recent issue of that magazine, these lists, although exceedingly useful to the technical student of birds, carry no authority further than that of the compiler's personal opinion, and no action has as yet been taken by the A. O. U. Committee on any of the cases contained therein.

The Audubon Association of the Pacific, with headquarters in San Francisco, has issued no. 1 of a monthly bulletin under the caption of "The Gull". This consists of four pages of announcements of meetings and field trips, reports of birds seen on field trips, and news notes of interest to members of the organization represented. While no editorial staff is indicated in connection with this first number, we think we see evidences here and there of the literary handiwork of the energetic President of the Audubon Association of the Pacific, Mr. C. B. Lastreto.

The publication of the Cooper Club military record which was scheduled to appear in this issue of THE CONDOR is now postponed till March issue. This is to give further time for securing important data still lacking in regard to certain of our men in service.

The vote is overwhelmingly in favor of continuing the Cooper Club membership roster as an annual feature of THE CONDOR. To be more explicit, the mail vote up to January 15 stands 24 to 5 against *dis*continuance. Numerous excellent reasons were advanced in the replies, to offset the plea for economy. The following extract from a letter to the Editor from Mr. John G. Tyler expresses the prevailing attitude in the matter. "To me the annual membership roster is one of the most valuable features of THE CONDOR. Frequently, when business has led me to other cities, I have taken with me the copy of our magazine containing the latest roster and when the day's work was over eagerly sought through the list for

Fig. 11. COUNCIL OF THE A. O. U. IN ATTENDANCE AT THE THIRTY-FIFTH STATED MEETING, CAMBRIDGE, NOVEMBER 12, 1917.

FROM LEFT TO RIGHT: DR. J. DWIGHT, DR. A. K. FISHER, MR. JOHN H. SAGE, DR. FRANK M. CHAPMAN, DR. WITMER STONE, MR. WILLIAM BREWSTER, MR. CHARLES F. BATCHELDER, MR. RUTHVEN DEANE.

Photo by W. K. Fisher.

the address of some member upon whom I might call. Some of the most delightful and lasting friendships have had their beginnings when, wholly unannounced, some Cooper Club member has dropped in at my house with the 'apology' that he was passing through town and had seen my name in the Club roster and thought he would look me up. The value of this list is perhaps greatest to those of us who reside at some distance from the Club centers and are thereby deprived from attending meetings; for through it we can get in touch with other sequestered members in nearby towns. May the annual roster continue to grow until it appropriates not only ten but twenty pages of our magazine!"

A wonderfully interesting sketch of the history and accomplishments of the American Ornithologisists' Union appears in a late issue of *The American Museum Journal* (vol. XVIII, 1918, pp. 473-483). This is from the pen of Dr. T. S. Palmer, the new secretary of the Union, and includes among other notable features an assembled photograph of the founders and officers of the Union as they appeared thirty-five years ago. In this connection it is a pleasure to be able to present herewith a group of certain prominent A. O. U. members, as photographed by Walter K. Fisher at the 1917 A. O. U. meeting. Three of these, Dr. A. K. Fisher, Mr. William Brewster and Mr. Charles F. Batchelder, appeared in the group of 1883.

Cooper Club members and other ornithologists will be interested to learn that a movement has been started to establish an American Society of Mammalogists. The committee on organization consists of Dr. Hartley H. T. Jackson, Chairman; Dr. Glover M. Allen, Dr. J. A. Allen, Dr. Joseph Grinnell, Mr. Ned Hollister, Mr. Arthur H. Howell, Mr. Wilfred H. Osgood, Mr. E. A. Preble, and Dr. Walter P. Taylor. Incompleted plans call for an annual meeting, sectional meetings, and the publication of a magazine of both a popular and technical nature. Life histories, ecology, evolution, and other phases of mammalogy will receive attention as well as taxonomy. It is hoped that an organization meeting can be held this spring (1919). Anyone who desires to join or is interested in the organization may address the chairman of the committee, U. S. Biological Survey, Washington, D. C.

We are greatly pleased to be able to announce that favoring circumstances have permitted Mr. W. L. Dawson to again take up work on his *Birds of California*. The preparation of the text is now well under way, the gathering of the material for illustration having already been practically completed.

Avifauna no. 13 has gone to press—a pretty convincing piece of evidence that good times are indeed returning. This number is J. R. Pemberton's *Second Ten Year Index to The Condor*. The question has been raised as to the propriety of publishing such an index as one of the Avifauna series, instead of separately. Without going into the reasons here, it has seemed on the whole best to follow the precedent set when the first ten year index was issued, namely to give it a number in the Avifauna series.

PUBLICATIONS REVIEWED

A Review of the Albatrosses, Petrels, and Diving Petrels [being contribution number 12 based upon the expedition of the California Academy of Sciences to the Galapagos Islands, 1905-1906], by Leverett Mills Loomis. Proc. Calif. Acad. Sci., 4th ser., vol. 2, pp. 1-187, pls. 1-17; issued April 22, 1918.

We learn from the "historic sketch", which comprises chapter one of the paper under review, that Elliott Coues, of all previous authors, has contributed most importantly to our systematic knowledge of the Tubinares. His work, in the light of later developments, has proven most scholarly; yet the chief of his contributions was published in 1864 and 1866, when he had not yet attained his twenty-fourth year. Loomis thus at the outset pays appreciative tribute to the chief of his predecessors in the field he has chosen for his own special study.

Under the heading "geographic distribution", among the more striking generalizations is that barriers to pelagic species of birds are to be found in the limits of food-producing areas. While there is good reason for recognizing control by temperature also, a third factor of importance concerns historical circumstances. Loomis divides the oceanic portion of the earth's surface into "distribution areas", classified into three different grades, namely, *superarea, area,* and *subarea,* based on the occurrence of species at their breeding stations. These areas are demonstrated on the basis of the Tubinares of the world. Of the subareas there are twenty-five all told, and one of these is the "Californian Subarea", with six diagnostic species.

The subject of migration is gone into at some length. Interesting cases are described, of the long "transequatorial" emigrations of several of the shearwaters from the South Pacific to the North Pacific. There are also regular emigrations, though less extended as a rule, of species from the north-

ern hemisphere. ". . . Migration is simply an exodus, followed by a return movement to breeding grounds." ". . . Bird migration is the adjustment of the bird population of the world to the seasons . . . , the evolution of the seasons being the remote cause of bird migration." The more speculative portion of Loomis's paper, for example as to how migrating birds find their way, are stimulative, and will always need to be taken account of by future students in the field, but they leave the reader in darkness at many turns. We note, in this connection, that John B. Watson's conclusions are discounted. Loomis can see no good reason for ascribing to birds a sixth sense by which they can find their way. They are guided solely, in his opinion, by ordinary faculties intensified, plus an "innate desire to travel." An admittedly weak place in this guidance theory concerns the return-migration of birds nesting on remote oceanic islands.

The detailed descriptions of molts and plumages, based in many cases upon long series of specimens, constitute perhaps the most important feature of the paper. We are quite convinced that Loomis is right in placing in synonymy a number of names, the original characterizations accompanying the proposal of which include only points of color just such as is demonstrated in available material to be due to age, fading, or loss of "bloom". No one who in the future attempts to deal systematically with the Tubinares can allow himself to overlook these important factors; and to become thoroughly familiar with them requires a great amount of close study and an exercise of mature judgment.

In this connection, Loomis lays great stress on what appears to him to be in this order of birds a relatively very common state of double coloration, or "dichromatism". In certain cases he is inclined to look upon dichromatism as subject to geographic factors, so that a light phase of a given species might predominate or occur exclusively in one area, and a dark phase of the same species in another. Here we are tempted to believe that the dichromatism idea has become confused with that of true geographic variation, the latter leading to the origin of new species. Dichromatism undoubtedly does exist in certain tubinarine birds, but there is a chance that Loomis has inferred its existence in cases where adequate material is still lacking to completely establish the fact.

Mr. Loomis's special method of handling geographic variation leads him to place under the synonymy of *Oceanodroma leucorhoa* no less than five current names of petrels, namely *socorroensis*, *kaedingi*, *monorhis*, *beldingi*, and *beali*. This case illustrates his tenet that "the subspecies theory" is "discarded as a theory that has outlived its usefulness." In other words only full species are given systematic recognition, the criterion of intergradation, as here specially applied, serving as the basis of exclusion. Geographic variation is handled as of coordinate importance with age, sexual and seasonal variation. It is as if the process of evolution itself had been denied!

On the other hand we cannot but heartily commend Loomis's conservative stand in regard to the recognition of genera. The futility of repeated subdivision of genera down to the only logical limit, the one-species genus, is well set forth. There can in our mind be little well-grounded defense of the principle lately put into practice by Mathews and others whereby it is concluded that two species occupying the same area must *ipso facto* belong to two separate genera.

Cooper's California record of the Yellow-nosed Albatross (*Thalassogeron culminatus*) on the basis of a skull found on the sea-beach near San Francisco is corroborated by Mr. Loomis. The skull, with bill largely intact, was carefully examined previous to its destruction in the fire of 1906. The species thus becomes re-instated on our regular list of California birds, it having heretofore reposed among the hypotheticals. Cooper's record of the Giant Fulmar from Monterey is not, however, credited.

Several tubinarine birds are recorded from the high seas some hundreds of miles off the coast of California whose names do not appear on our state list nor even on the North American list. Of course the limits of a state with a sea coast can only be set at a greater or less distance offshore in arbitrary fashion, but it would seem to the undersigned that they should not extend beyond say one hundred miles outside the headlands or outermost islands. It is perhaps a somewhat different matter as regards inclusion in the North American list.

The care displayed throughout in grammatical construction, spelling and final proof-reading, has resulted in a production well-nigh above criticism from these standpoints. Indeed, it may be stated with some assurance that no ornithological paper has appeared in years so free from typographical

blemishes. But that absolute perfection is beyond human reach is occasionally demonstrated even in the present painstaking product. For example, grammatical lapses in the following quotations from page 164 are apparent: "The duties of incubation were shared by both sexes; in two instances the male was setting and in three the female."

Whatever of misgiving may be aroused in the mind of the reader of Loomis's paper in regard to some of the theoretical interpretations and to the peculiarity in handling geographic variation, the paper must be commended for the extraordinary care exercised in gathering and publishing the multitude of facts therein made available in regard to the relatively little known Tubinares.—J. GRINNELL.

THE HAWKS OF THE CANADIAN PRAIRIE PROVINCES IN THEIR RELATION TO AGRICULTURE, by P. A. TAVERNER. Canada Geological Survey, Museum Bulletin No. 28, Biological Series no. 7, August, 1918, pp. 1-14, 4 plates (8 colored illustrations), 7 figs. in text.

It is to be hoped that this bulletin will be given the widest possible circulation, especially among the farmers of the region covered, for although the treatment of the subject is necessarily of the briefest, the author has nevertheless compressed within these few pages much accurate information upon a generally misunderstood subject. The written descriptions and the illustrations should together suffice for ready identification of the species by the layman, and the nature of the food of each is concisely indicated. Emphasis is rightly placed upon the harmlessness of most hawk species, as regards human interests, and the absolute benefits accruing to the farmer through the activities of many of them.

Such educational work as this is valuable and should be pushed farther. It has been neglected in the past with results familiar to all ornithologists. The fate of the White-tailed Kite in California and of the Mississippi and Swallow-tailed kites in Illinois are fair examples of what is happening elsewhere throughout the country,—the destruction of beautiful and harmless birds through ignorance and thoughtlessness. Printed matter calculated to offset such action is of the scarcest, and seldom reaches the individual who should be convinced of the error of his ways. Of United States government publications, the one and only report adequately covering the subject, Dr. A. K. Fisher's *Hawks and Owls of the United States*,—it needs no eulogy here—which should have been forced upon the attention of every farmer and sportsman in the country, has lapsed into the position of a prize for the ornithological bibliophile! As such it now fails of useful service to any important degree.

On the other hand, there are popular magazines of wide circulation on whose pages may be seen advertisements of ammunition dealers, showily placed and attractively illustrated, calling upon the sportsman to go forth and shoot "hawks", propaganda that reach scores of people where there is one who ever hears a word on the other side. Audubon societies as a rule seem to have paid but scant attention to this phase of bird protection, the members thereof doubtless having for the most part but hazy notions of the true character of most predaceous birds; and Federal and state biologists have lately found all-engrossing occupation in the destruction of "noxious" animals—some of which used to be kept in bounds through the assistance of the formerly abundant Raptores. So, with most people lacking the knowledge to discriminate between harmful and beneficial species, usually in ignorance even that there are any useful kinds, and with the ever-present irresponsible gunner eager to shoot at such a mark, even should there be laws against doing so, the hawks suffer in consequence. For all of these reasons it is a pleasant privilege to call special attention to Mr. Taverner's excellent paper, and to urge the desirability of the broadcast distribution of reports such as this one is.—H. S. SWARTH.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

AUGUST.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology at 8 P. M., August 15, 1918. Dr. Evermann presided and the following members were present: Messrs. Carriger, Grinnell, Lastreto, Loomis, Noack, Swarth and Trenor; Mesdames Allen, Grinnell, Kluegel, Schlesinger; visitors, Miss Daniels, Miss Guthrie, Mr. Kelly, Mrs. Swarth, and Miss Hittell.

By special request the program preceded the business meeting. Mr. Leverett M. Loomis read an instructive paper on bird migration, in which he ascribed conflicting observations as due to reports of delayed migration rather than actual flight, and

discredited records pointing to a sixth sense as based upon such erroneous reports. General discussion was led by Dr. Grinnell.

The business of the evening was then disposed of. The minutes of the July meeting were read and approved, and the June and July minutes for the Southern Division were read. Mrs. G. E. Kelly was elected to membership, and Prof. H. E. McMinn, elected by the Southern Division, was approved for membership. The following names were presented: Miss Esther Guthrie, Woodland, California, by Mrs. J. T. Allen; Mrs. Harriette W. Bridges, Oakland, by Miss Margaret W. Wythe; Miss Isabel A. Thomson, Fallon, Nevada, by Mrs. Allen; Richard M. Hunt, Berkeley, by J. Grinnell; and J. W. Hungate, Cheney, Washington, by Barton W. Evermann and Walter P. Taylor.

A letter from Mrs. Florence Merriam Bailey to Dr. Grinnell, suggesting that the Cooper Club should have a place where note-books and photographs could be preserved, was read. Adjourned.—Amelia S. Allen, *Secretary.*

September.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, Berkeley, at 8 p. m., September 19, 1918. Dr. Evermann was in the chair and the following members were present: Messrs. Bryant, Carriger, Cooper, Evermann, Hunt, Lastreto, Loomis, Mailliard, Morley, Storer, Swarth, Wetmore and Wheeler; Mesdames Allen, Grinnell, Kluegel, Knappen, Meade and Schlesinger. The visitors present were Mrs. Wheeler, Mrs. Swarth and Mr. Schlesinger.

The minutes of the August meeting were read and approved. Miss Esther Guthrie, Woodland, Calif., Mrs. Harriette W. Bridges, Oakland, Miss Isabel Thomson, Fallon, Nevada, Richard M. Hunt, Berkeley, and J. W. Hungate, Cheney, Wash., were elected to membership. Mrs. E. D. Roe, San Francisco, was proposed for membership by Carl R. Smith, and Paul J. Fair, San Francisco, by Dr. Evermann.

An interesting letter from Mr. Ridgway describing early conditions in Indiana was read by Dr. Evermann.

Following up the suggestion made by Mrs. Florence Merriam Bailey, Mr. Swarth presented a motion that members of the Club be invited to deposit note-books or other records in the care of the Cooper Club. The motion was carried, as was also a motion offered by Mr. Mailliard that a committee of three be appointed by the Chair to arrange with the Southern Division as to the best place for keeping such material.

Mr. Mailliard reported a nighthawk as seen in San Francisco.

Mr. Alexander Wetmore then read an account of birds found at Lake Burford, northern New Mexico. He dwelt particularly upon water birds and especially upon their habits of display during the mating season.

At the close of the paper Dr. Evermann announced the committee to recommend place of deposit for ornithological records as follows: Mr. Joseph Mailliard, Mr. Harry S. Swarth and Mr. H. W. Carriger. Adjourned. —Amelia S. Allen, *Secretary.*

October.—Because of quarantine regulations, the regular October meeting of the Northern Division of the Cooper Ornithological Club was held under the trees outside the Museum of Vertebrate Zoology, the time being October 17, 1918, at eight o'clock. Dr. Evermann presided. The following members were present: Messrs. Bryant, Carriger, Hanford, Hunt, Kibbe, Loomis, Mailliard, Noack and Wheeler; Mesdames Allen, Bamford, Griffin, Kelley, Kibbe, Knappen and Meade. Visitors present were: Mrs. Morley, Mrs. Wheeler, Mr. Kelley and Mr. Meade.

The minutes of the September meeting were read and approved. Paul J. Fair, San Francisco, and Mrs. E. D. Roe, San Francisco, were elected to membership. Also S. Herbert Jones, F. B. Hart, Reginald Hopkins, John Mercer, Ernest Windle and O. H. Homme, whose names had already been passed upon by the Southern Division.

Resolutions relating to the proposed drainage of Malheur Lake for the benefit of real estate speculators, drawn up and signed by the Southern Division, copies of which were addressed to the U. S. Secretary of Agriculture, the Governor of Oregon, and the Land Board of Oregon, were read to the Club. By unanimous vote of the Club the Secretary was instructed to sign the resolutions for the Northern Division and to forward them to the proper parties.

Mr. Joseph Mailliard then gave an account of his visit to the Feather River country, with many interesting observations upon the songs, habits and nests of the birds found at different elevations.

After discussion and comparison of observations, the Club adjourned.—Amelia S. Allen, *Secretary.*

SOUTHERN DIVISION

August.—The regular monthly meeting of the Southern Division, Cooper Ornithologi-

cal Club, was held at the Museum of History, Science and Art, August 29, 1918, at 8:00 P. M. In the absence of president and vice-president, Mr. Daggett was acclaimed chairman of the evening. Other members present were: Messrs. Barker, Brouse, Chambers, Colburn, Esterly, Hanaford, Holland, Law, Peyton, Robertson and Wyman; Mesdames Husher and Law. Mrs. Robertson was a visitor.

Minutes of the July meeting were read and approved. On proper motion the Secretary was instructed to cast an electing ballot for the parties whose names were presented at the July meeting. New names presented were: John D. Mercer, Los Angeles, by Fred Barker; Ernest Windle, Avalon, by A. B. Howell; and O. H. Homme, Pullman, Washington, by W. P. Taylor. Also, from the Northern Division, the names of Eva T. Griffin, San Francisco, and Elizabeth Ferguson, Berkeley, both presented by Mrs. J. T. Allen.

A notification, directed to one of the members personally, from the Biological Survey, to the effect that hereafter a special permit from the Department of Agriculture will be necessary for collecting migratory birds, was read to the Club. On motion by Mr. Chambers the secretary was instructed to secure a supply of blank applications for convenience of the members.

In the general discussion that followed Mr. Peyton, than whom none is more familiar with the haunts of the Condor, and who has collected extensively, oologically, among the eagles of Ventura County and the Santa Barbara Islands, told some of his experiences and observations. A tray of study-skins of Juncos and near-related sparrows received the usual attention. Adjourned.—L. E. WYMAN, *Secretary.*

NOVEMBER.—The regular monthly meeting of the Southern Division was held at the home of Mr. W. Lee Chambers, Eagle Rock, November 29, 1918, at 8:00 P. M. Members present were Messrs. Brown, Brouse, Chambers, Colburn, Dickey, Esterly, Law, Little, Nokes, Miller, Rich and Wyman, and Mrs. Law. President Miller officiated.

Minutes of the August and September meetings were read and approved, and those of the same meeting of the Northern Division were read. On proper motion the secretary was instructed to cast an electing ballot for the following parties, whose names were presented at previous meetings: H. L. Dillaway, Everett, Washington; John J. Furber, Klamath Falls, Oregon; Dr. Geo. W. Field, Washington, D. C.; Dr. L. E. Hibbard, Burns, Oregon; John D. Mercer, Los Angeles; Ernest Windle, Avalon; O. H. Homme, Pullman, Washington. The names of Maria V. Ballard, Eva T. Griffin, and Elizabeth Ferguson from the Northern Division, were approved.

New names presented were: A. L. Gormley, Arnprior, Ont., Canada, and Edward Gordon Alexander, Lexington, Mo., by W. Lee Chambers; Donald Still, Tucson, Ariz., by A. B. Howell; while the following were received from the Northern Division: Mrs. G. E. Kelly, Alameda; Richard M. Hunt, Berkeley; Mrs. Harriette W. Bridges, Berkeley; Miss Esther Guthrie, Woodland; and Miss Isabel A. Thomson, Fallon, Nevada.

Letters from Gov. Withycombe of Oregon, also from the Land Board of that state, and from the Secretary of Agriculture, Washington, D. C., acknowledging receipt of the Cooper Club's protest against the draining of Malheur Lake, Oregon, were read. The resignation of Mrs. Robert Fargo was presented and accepted.

A communication from the Northern Division was read, calling attention to the need of a Club repository for field notes. After some discussion, on motion by Mr. Law, seconded by Dr. Rich, and unanimously carried, it was expressed as the sense of the meeting that the Club's library be formally organized by the appointment of two librarians to be named, one each, from the active staff of the Museum of Vertebrate Zoology, Berkeley, and of the Museum of History, Science and Art, Los Angeles, and both to be members of the Cooper Ornithological Club. These librarians shall be the custodians of all publications, manuscripts, field notes, and other ornithological data given or bequeathed to the Club, and such material shall be deposited in the said two museums in such manner as to be available to scientific students, due regard being given to the expressed wishes of the respective donors. [This resolution is submitted now to the Northern Division.]

On motion of Dr. Rich, seconded by Mr Law, a vote of thanks was extended to Mr. and Mrs. Chambers for their hospitality in entertaining the Club and affording the opportunity for what was pronounced the most enjoyable meeting of the year.

In the half-hour of general discussion Mr. Law reported a nest, with two young, of the Green-backed Goldfinch, found on November 14. A session in Mr. Chambers' library, where many rare volumes were inspected, completed the meeting. Adjourned.—L. E. WYMAN, *Secretary.*

For Sale, Exchange and Want Column.—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. LEE CHAMBERS, *Eagle Rock, Los Angeles County, California.*

WANTED—Auk, vols. 1 to 6, inclusive; Bird-Lore, vol. 1, nos. 2, 4; vol. 2, nos. 2, 3; vol. 3, nos. 1, 2, 3; vol. 19, complete. Offer cash or exchange. Wanted, one pair each of Harlequin Duck, Cinnamon Teal, Lesser Snow Goose, and any of the Eiders except American. Offer water-fowl and other birds from this section, eggs in sets, and copies of The Birds of Virginia.—HAROLD H. BAILEY, *Box 112, Newport News, Va.*

WANTED—A1 skins of the following: A. O. U. nos. 393a, 393b, 393e, 394, 412a, 474k, 474l, 484, 498b, 498c, 498g, 530, 540b, 552, 561, 588, 719, 721, 726a. Can offer in exchange: 430, 474m, 478a, 478e, 481, 499, 500, 518, 562, 581d (topotype), Sierra Fox Sparrow, 581h, 592.1.—JOSEPH MAILLIARD, *1815 Vallejo St., San Francisco, Calif.*

IF THE STATE NORMAL SCHOOLS are to do all they should in training their teachers to go into the schools of California prepared to give the best kind of bird study, they will need the help of Cooper Club members. I wish to send out such a call for the State Normal School at Chico. We shall appreciate gifts of any grade of skins, or information about available collections for purchase. —BERTHA CHAPMAN CADY, *State Normal School, Chico, California.*

WANTED—Ridgway's Birds of North and Middle America, vols. 1 and 3.—W. C. HANNA, 1000 *Pennsylvania Ave., Colton, Calif.*

HAVE you any good skins of birds from other countries to exchange for A1 specimens from North America, Japan and Australia; or can you refer me to any collector in foreign lands who will exchange?—HENRY K. COALE, *Highland Park, Ill.*

WILL EXCHANGE full sets of the following: A. O. U. nos. 52, 14, 71, 154, 157, 162, 114.1, 172a, 174. I want skins of any of the geese and swans, and of the Limicolae and Gallinae.—FRED L. GRANVILLE, *2238 Canyon Drive, Hollywood, Calif.*

FOR SALE OR EXCHANGE—Choice 4x5 and 5x7 prints of western birds, nests with eggs, and young. Also large collection of wild flower photos. Write for list and prices.—H. J. RUST, *Box 683, Coeur D'Alene, Idaho.*

THE WARBLER—Second series. Seven volumes complete, $3.50 post paid. Very few full sets left. Vols 1 and 2, with a dozen exquisite colored plates of rare birds eggs, is in good supply, and the two volumes will be mailed for $1.00.—J. L. CHILDS, *Floral Park, N. Y.*

JOHN B. LITSEY, 7611 May St., Fort Worth, Texas, wants: One skin each of ♂ and ♀, A. O. U. nos. 239, 242 and 246, in winter plumage, taken in Mississippi Valley. Can offer choice sets.

I WANT a complete set or odd volumes of the Proceedings of the Biological Society of Washington Will give good exchange or cash.—W. LEE CHAMBERS, *Eagle Rock, Los Angeles County, California.*

I DESIRE good museum material with complete data. Birds, eggs, marine forms, etc. Can furnish any of the southern birds, and have a good series of ducks: Gadwall, Blue-winged Teal, etc.; also shorebirds, geese and herons. Address ALFRED M. BAILEY, *Louisiana State Museum, New Orleans, La.*

MEETINGS OF THE COOPER ORNITHOLOGICAL CLUB

Northern Division: 8 P. M., third Thursday of month, at Museum of Vertebrate Zoology, University of California, Berkeley. Take any train or car to University Campus. The Museum is the corrugated iron building on south side of campus just north of football bleachers.—MRS. AMELIA S. ALLEN, *Sec'y., 37 Mosswood Road, Berkeley, Calif.*

Southern Division: 8 P. M., last Thursday of month, at Museum of History, Science, and Art, Exposition Park, Los Angeles. Take "University" car south on Spring St., or "Vermont and Georgia" south on Hill. Get off at Vermont and Thirty-ninth, and walk two blocks east to Exposition Park. The Museum is the building with the large dome.—L. E. WYMAN, *Sec'y., care of Museum.*

Intermountain Chapter: Get date and place from the Sec'y., ASHBY D. BOYLE, *351 5th Ave., Salt Lake City, Utah.*

San Bernardino Chapter: Get date and place from the Sec'y., M. FRENCH GILMAN, *Banning, Calif.*

COOPER CLUB PUBLICATIONS

THE CONDOR

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THE CONDOR

A Magazine of Western Ornithology

Volume XXI March-April, 1919 Number 2

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COOPER ORNITHOLOGICAL CLUB

THE CONDOR

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A Bi-Monthly Magazine of Western Ornithology

Volume XXI **March-April, 1919** **Number 2**

[Issued March 25, 1919]

NESTING NOTES ON THE ROCKY MOUNTAIN CREEPER

By W. C. BRADBURY

WITH FOUR PHOTOS

ON JUNE 21, 1917, accompanied by Robert Niedrach and Egmont Rett, and having arrived at the limit of vehicle transportation, in Gilpin County, Colorado, I started afoot to climb a steep, blazed trail up the mountain side for the open ground above timber-line. Our search was mainly to be directed toward the nests of the White-tailed Ptarmigan and Brown-capped Rosy Finch. The timber at the upper altitudes was dense, and the obscure trail could be followed only by the occasional "blazing" on trees, since long stretches were covered by deep snow drifts. This, together with the rarified air at an altitude of nearly 11,000 feet, made progress slow and difficult, and necessitated frequent stops for rest and to regain breath. During one of these pauses, about 200 feet below timber-line, we noticed a small bird that by its habit of diving from one tree to the base of another, we identified as a Rocky Mountain Creeper (*Certhia familiaris montana*). This bird was soon joined by its mate. After watching the pair for nearly a half-hour and having in mind a hard day's work yet ahead of us, Rett and I went on, leaving Niedrach to follow the birds until their nest was discovered or until they were lost. We had gone but a short distance, however, before being recalled by Niedrach's lusty signal, and found that he had located the nest by seeing one of the birds enter it.

The nest was about ten feet from the ground, on the side of a dead spruce sixty or eighty feet tall, from which most of the limbs and considerable of the bark were gone. It was placed between the trunk of the tree and a section of the bark that had warped away from its original position. As the nest was about six inches below the entrance, which was on one side of the section of bark, the most careful investigation was necessary to prevent endangering its contents, which proved to be three eggs. These were left undisturbed. (See fig. 12.)

On revisiting the nest, on June 24, it was found to contain seven eggs. It was next visited on June 26 and as the number of eggs had not been increased and as we had to depart for Denver the next day, these, together with the nest

and parent birds were collected. An examination of the birds showed that no additional eggs would have been laid.

One or both birds were present and remained nearby on each of the visits to the nest, and though quite tame and fearless evinced no special solicitude while it was being examined and finally taken. On the first and last visits it required an unusual amount of hammering on the tree trunk to cause the bird to vacate the nest.

The nest proper was placed on a foundation of small spruce twigs which had found lodgment or been placed behind the gaping section of bark where there were a number of small bunches of spiders' web. The nest itself was composed of fine, shredded, inner bark fiber and occasional flake-like chips of

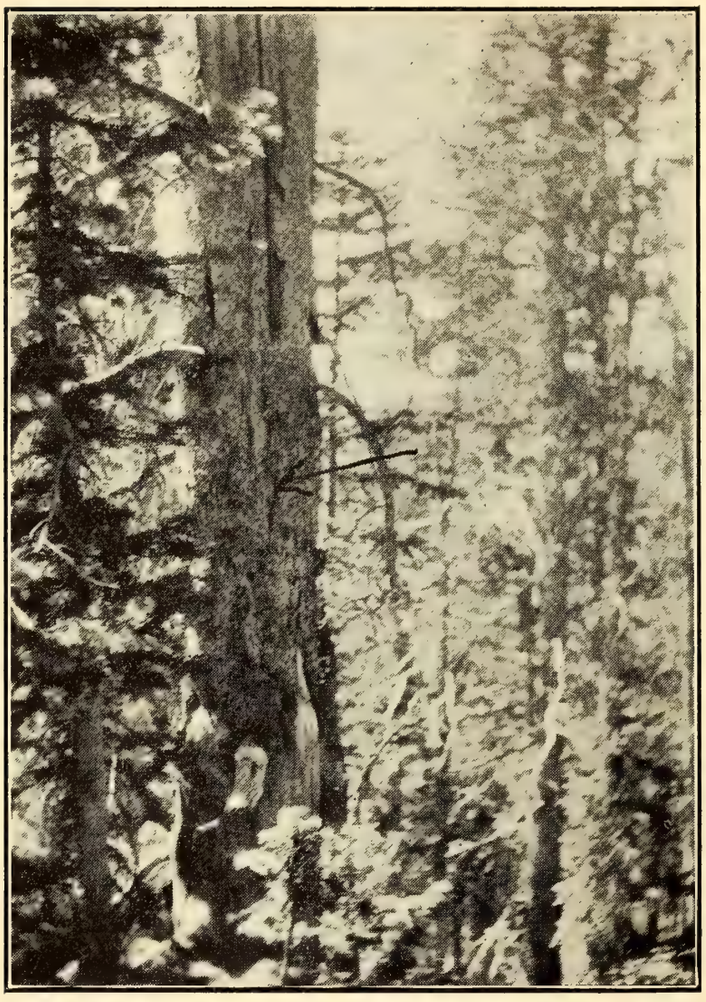

Fig. 12. Nesting site of Rocky Mountain Creeper, near Alice, Colorado.

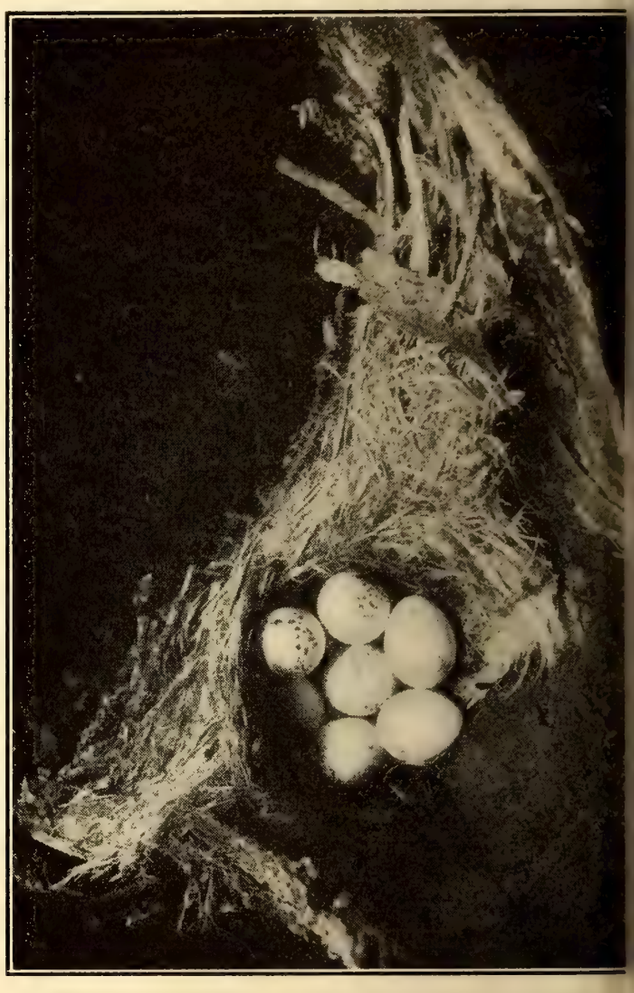

Fig. 13. Eggs and nest of Rocky Mountain Creeper.

the same material, with a few small fluffy feathers matted to the inside surface of the cup. (See fig. 14.)

The extreme dimensions of the nest, including foundation, are: Top to bottom, 7 inches; width, 5 inches. While the nest itself was 3 inches deep and 4 inches broad in one direction, the restrictions due to its location confined it to a breadth of 1½ inches in the other direction. In fact, so limited was the space that the bark itself comprised one side of the cup, the latter being 1½ by 2 inches at the rim and 1½ inches deep.

The eggs are white, sparsely dotted with rufous (Chapman's color chart) over the entire surface, more heavily marked with spots and dots of the same

Fig. 14. NEST OF ROCKY MOUNTAIN CREEPER, AFTER REMOVAL FROM SITE BUT IN PLACE AGAINST BARK STRIP.

color at the larger end. The density of the spotting varies individually among the eggs. (See fig. 13.) The seven eggs show but very slight variation in size. The measurements average .52x.40 inches.

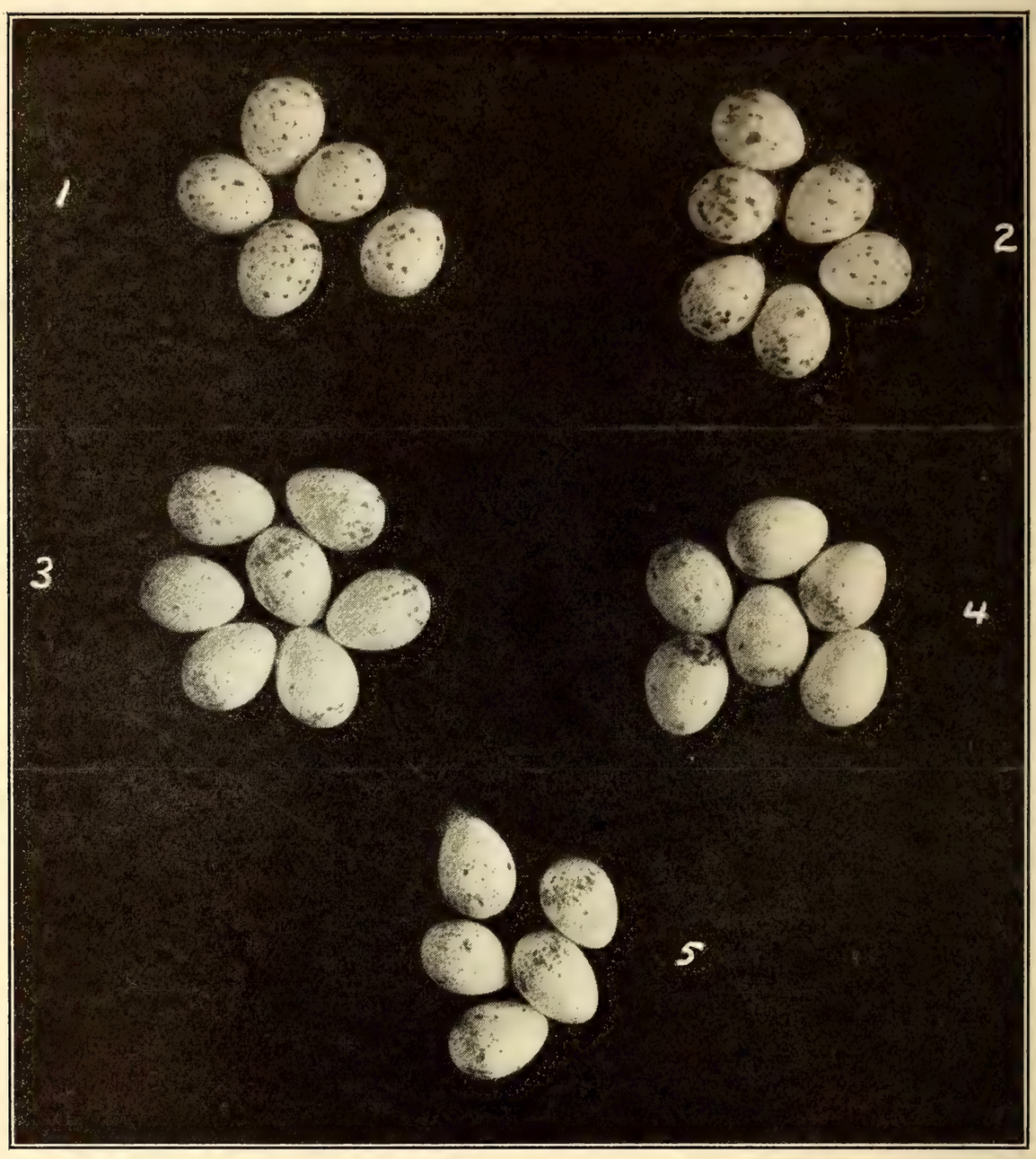

Fig. 15. Set no. 1, Brown Creeper; no. 2, Mexican Creeper; no. 3, Rocky Mountain Creeper; no. 4, California Creeper; no. 5, Sierra Creeper.

Photo by J. D. Figgins

So far as I am aware, this set is the first to be taken in Colorado and since it completes the genus as represented in our collection of eggs, I submit a photograph of the eggs of the five subspecies for comparison. (See fig. 15.)

Denver, Colorado, November 25, 1918.

ALBERT MILLS INGERSOLL—AN AUTOBIOGRAPHY

WITH PHOTO

THE UNDERSIGNED prefers to believe that his life history is of too little general interest to warrant appearance on the pages of THE CONDOR. But after the third urgent request from his esteemed friend, the Editor, the writer sets aside his own preferences and with due apologies submits the following autobiography.

I, Albert Mills Ingersoll, the third child of Dr. J. O. M. and Caroline E. Ingersoll, was born at Ithaca, New York, August 9, 1857. From hearsay, I learned that I came into this world a very frail baby and that my parents scarcely expected to raise me. At the age of eighteen months, I was picked up and tossed in the air by a playful physician, who exclaimed "this is the way to make weak babies grow". Unfortunately, he didn't realize that he was performing the act in a room having a rather low ceiling, and the result was an unconscious child. I struck the ceiling midway between two joists, the flexible laths taking up some of the shock. My little head made a dent in the plaster that was easily discernible in later years when pointed out to me.

The worst accident that happened to me, occurred in 1868. Slipping on an ice-covered gate my head was thrown violently against a post. Somewhat dazed, but scarcely realizing how seriously injured I was, I rose up and started toward school, fainted, and was carried home, never again to enter a schoolhouse as a pupil. This blow, occurring at the age of eleven, had a far-reaching effect on the future course of my life and was the indirect cause of my having ample time to engage in natural history pursuits. Dimness of vision increased gradually until it was impossible for me to distinguish men from women at a distance of one hundred feet. My mother took me to consult the famous oculist, Dr. Agnew, of New York City. His diagnosis of my affliction was passive congestion of the optic nerve. He advised that I refrain from reading or resuming my studies under a year and warned me that I would court blindness by straining my eyes while in their present condition. I was told that by living an out-of-door life and taking suitable medicines to build up my impaired health it was reasonable to expect the eye trouble would pass away by the time I was of age.

After weary months of suffering my eyes became as keen of sight as formerly, but they never recovered from certain muscular troubles; and to this day reading and writing is so trying that they effect my general health if carried on for more than an hour or so. On many days, I can only skim over the daily papers.

Hampered by poor health in addition to this serious eye trouble, I experienced difficulty in choosing an occupation, realizing the necessity of selecting a business requiring of me but a minimum amount of clerical work. Always extravagantly fond of flowers and candy, I fancied I could succeed in making a living in either the florist or confectionary business. As time rolled on, the craving for sweets appealed to me stronger than the love for flowers; so, concentrating on a purpose, I decided to move to San Diego and engage in the candy and ice cream business.

On September 22, 1888, "Ingersoll's Palace of Sweets" opened its doors to the public. That memorable event occurred during my thirty-first year of life.

and I had never worked for anybody or had business experience of my own. Nevertheless my success was such as to prove a surprise to other San Diego confectioners who had said I would "go broke" before many months. The venture was highly satisfactory in every way. Prospering from the beginning, and getting in the lead, I was able to retire at the end of eighteen years. On

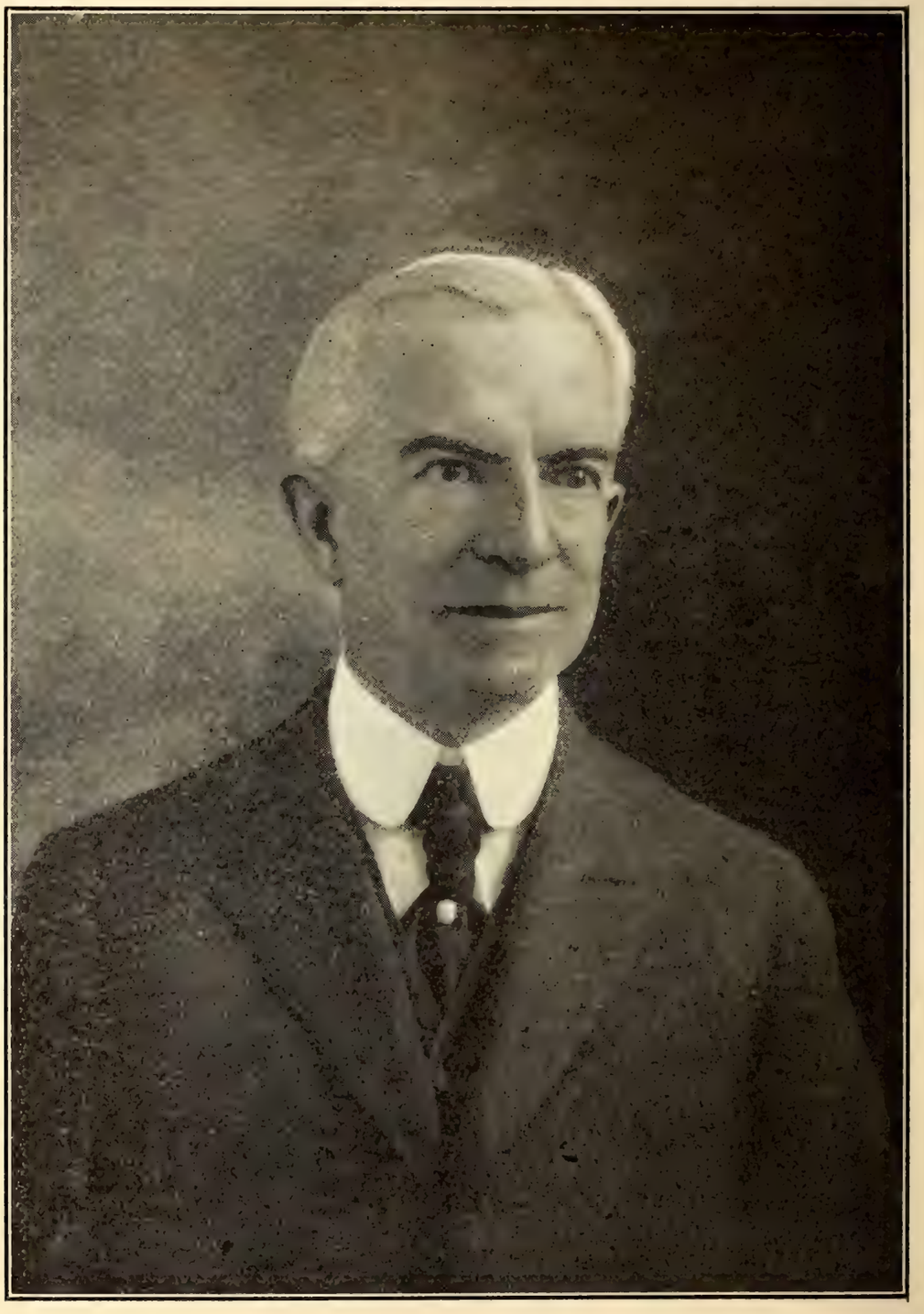

Fig. 16. Albert Mills Ingersoll.

selling out, a larger price was obtained for the goodwill, and right to continue business under my name, than for the entire stock of goods and fixtures combined.

Recalling some of my boyhood experiences to mind, I distinctly remember that the first eggs I took were robin's. Imagining eggs of such a beautiful blue would be more palatable than plain colored hen's eggs, and wishing some

good "eats", I dropped them into a teakettle to boil. The rapid ebullition burst the shells and liberated two disgusting embryos. These, on being poured into a pan by a servant, caused her to exclaim, "Mrs. Ingersoll! Mrs. Ingersoll! come out to the kitchen and see the horrid bugs I found in the hot water". The sight of those big-eyed objects was not at all appetizing, and a gentle lecture from my mother was intended to teach me the error of robbing birds of their treasures.

Generally taking up whatever fad was in vogue among my boy associates, various objects were collected in a desultory way during my youthful days. Recital of incidents in connection with some of them may not be out of place. My interest in postage stamps and coins was squelched by a few words from Prof. George Latura Smith. As near as I can recollect, he said, "But why waste time by giving attention to such inanimate things when nature offers so much of greater interest? Anyone can purchase old stamps and coins, but money won't buy the pleasure and satisfaction to be gained in the study, collecting and preparation of specimens of living things." Beginning to realize that I was on the wrong track, a quick decision switched off two of my hobbies. My album of stamps was traded to a gentleman connected with the Ithaca glass works for a rowboat and for sheets of glass especially bent to magnify objects in an aquarium for aquatic plants and insects.

My entomological efforts had heretofore lain in the accumulation of showy butterflies and moths, taken principally through a selfish desire to outdo the other boys. Seeing my error, I resolved to learn everything possible in regard to the lives of these beautiful creations of nature, and also of insects in general. Various insects were successfully raised in breeding cages provided with earth or water for the growing of plants suitable for the larvae of the various species to live on. Prying into the habits of some nocturnal insects necessitated night work, but as these investigations were carried on previous to the era of electric lights, I found the gaining of knowledge by aid of a dark lantern and oil lamp too injurious to my eyes to be continued. My enthusiasm in this wonderfully interesting study had been aroused to a degree that made the mere collecting of specimens impracticable. Circumstances, as indicated, turned my attention to larger objects.

Capturing a ferocious coon at a despoiled wood duck's nest, I decided he should form the nucleus of a menagerie that had been in contemplation since the latest visit of "the largest show on earth". Several Ithaca boys started menageries during that particular period, and rivalry amongst us was at a high pitch, when Velvet, my seven-toed cat, "did her bit" by furnishing a greater attraction than any of my competitors could boast of. By drowning, her numerous litters of kittens were invariably reduced to two. On one occasion, after half of her day-old kittens had been fed to my captive great horned owls, I chanced to find a red squirrel's nest with young as small as mice, with hairless tails and unopened eyes. They were the homeliest animals imaginable. The mother was shot, and wishing to raise two of the young ones to maturity, they were taken home and substituted for Velvet's destroyed kittens. The cat resented the imposition at first; but on being shown the dead mother, she seemed to sense that it was her duty to foster the orphans. From then on, she was as solicitous for their comfort as for that of her own kittens. Later, on taking a squirrel and kitten away from her and placing them on the floor, Velvet jumped out, caught the squirrel by its neck, and carried it to her bas-

ket; her own kitten was then taken home in the same manner. This annoying act of mine was repeated frequently in the presence of visitors to show to them the cat's apparent affection and greater care for the orphan.

An acquaintance caused an article to appear in a local newspaper calling attention to "Bert Ingersoll's Zoo". Curiosity brought many people to see my squirrels and kittens feeding at the same "lunch counter". My lovable old cat once surprised me by retrieving, uninjured, a small garter snake that had escaped to a neighbor's garden while being transferred to a new reptile cage.

The rearing of some young screech owls, captured as they were about strong enough to leave a snug hollow in an elm, proved amusing in several ways. One, in reddish phase of plumage, was a favorite and entertained us by taking from the hand large angleworms as offered, swallowing them alive. Closing beak and eyes, the bird would simulate sleep and remain motionless. In the course of forty or fifty seconds the struggling worms would slowly emerge from between the mandibles, slip out an inch or two, and swing loosely around in space until feathers were touched. Violent efforts to escape in their direction always roused the owl to action. Reswallowing these squirming tidbits, she would assume her previous attitude and be ready for a repetition of the performance. It was such a nauseating sight that one spectator said she could hardly keep her own mouth closed! Angleworms seeming to be a favorite food of this screech owl, it is reasonable to suppose that it was an enjoyable sensation to have its palate tickled by them.

My adult screech owl would not eat raw or cooked vegetable matter in any form; but the two immature birds reared by me would eagerly swallow young leaves and tender shoots of certain plants. A preference was shown for those of the grapevine. Later, advanced growth making the grape unacceptable to them, and having difficulty in finding a palatable substitute that would be eaten from my hand, I placed an assortment of green stuff in their cage, that the kind needed might be selected during the night and eaten by them. As my pets gradually lost their craving for this line of food, and stopped eating it altogether after being in captivity a month or two, I am inclined to believe screech owls require a mixed diet of animal and vegetable matter during an early period of life.

The reading of Samuels' "Birds of New England and Adjacent States", a treasured 1871 Christmas gift, had much to do in awakening my interest in ornithology and oology. Starting a collection of bird skins with an albino robin, accidentally killed by coming in contact with a baseball, did not lead to the taking of albinos only. Birds' eggs were first taken without nests and kept, a pair of a kind, in a spool cabinet. I had never seen a well arranged or large collection of eggs. But observing, after a little field work, that eggs looked more attractive in original nests than in a sawdust-lined drawer or box, I decided that my collection should have one nest, with complete set of eggs displayed in it, of every obtainable species, and also a set of each species of eggs to be kept by itself. This resolution was made in 1875. In June of that year I collected a nest and four eggs of the Vesper Sparrow at Ithaca, New York. This initial set is still in my collection, and owing to painstaking care, this and all my earlier collected specimens are now in as fine a state of preservation as when first placed in my cabinets.

My field work has mainly been carried on in twenty-four counties of Cali-

fornia; but the birds of New York, Illinois, Florida, Arizona and Idaho have also received visits from me. Favorable opportunities enabled me to add to my collection of nests and eggs a larger proportion of personally taken species and subspecies than is commonly the privilege of an oologist. A set of Spotted Owl, taken in San Diego County, March 24, 1884, is the most highly prized of any set in my collection. Most oologists, however, might consider as of greater value my Condor egg or either one of the following nests accompanied by beautifully marked sets of eggs: Everglade Kite, Golden Eagle, Farallon Rail. My collection of bird skins, nests and eggs is willed to the California Museum of Vertebrate Zoology.

The most important capture of my life, is Mrs. Ingersoll, formerly Miss Laura I. Stevens, of Sacramento, California.

ALBERT MILLS INGERSOLL.

San Diego, California, January 18, 1919.

NOTES ON THE BREEDING HABITS OF THE RED CROSSBILL IN THE OKANAGAN VALLEY, BRITISH COLUMBIA

By J. A. MUNRO

THE FOLLOWING notes apply chiefly to a small section of timbered country close to Okanagan Landing, its topography being the familiar Okanagan type of low mountain covered with Douglas fir and yellow pine, including both original forest and second growth.

Red Crossbills (*Loxia curvirostra minor*) were present in unusually large numbers during the year 1918, and in order to compare their relative abundance with other years, a synopsis of my field notes, taken since 1911, is included.

These birds were fairly common on December 14, 1911, in yellow pine country near Okanagan Landing. A series of males collected on this date had the sex organs enlarged, but no mated birds were seen. It is probable that these birds remained until the following spring, but as no special interest was taken in them at the time, no attempt was made to keep a record of their movement as was done in subsequent years. The only record for 1912 was made on March 13, when a flock of fifteen birds was seen at Nahun, fifteen miles south of Okanagan Landing on the west side of the lake. A small flock was seen several times in the same district at an altitude of 4000 feet during the first week of December, 1913.

No other records were made until July 21, 1915, when a small flock was seen at Okanagan Landing, probably their first appearance for that year. As this locality was being carefully worked at the time it is unlikely that they would have escaped observation, had they arrived before this. A female taken on August 5, and another taken on August 18, had the worn abdominal patch of breeding birds and a third female in breeding condition, was taken on February 24, 1916. This small flock was seen at intervals until April 20, 1916, which was the last date on which Crossbills were observed until the big year 1918, when they were first noted on January 9. They were seen daily there-

after in gradually increased numbers until the maximum was reached about February 15, when there were at least six hundred birds inhabiting an area of approximately three square miles.

At this time when bird-life was relatively scarce it was possible to devote much of my leisure to their study. There had been a heavy crop of yellow pine and Douglas fir seeds (these are the only conifers in this area) and possibly this might account for their unusual abundance and their long stay.

During the cold weather of January and the early part of February, before there was any sign of mating, the birds remained in flocks of from ten to thirty in the heavily foliaged conifers. As they were usually silent they would often have escaped notice had it not been for the presence of the winged seeds scattered broadcast on the snow, each with the kernel neatly cut out, and for various methods used for exciting the birds. An imitation of the Pygmy Owl call brought them at once and they would circle over the tree tops in their eagerness to locate their enemy. When the sound was located they would fly from tree top to tree top near the source of the sound, uttering their sharp alarm note until the calling ceased, when they would disappear into the forest again.

Dissection of a series of males collected on February 19, showed the sex organs to be in various stages of development from 1 mm. to 5 mm. in length. Males in the red, the yellow, and the mixed red and yellow plumages, were found to be in breeding condition, and others in similar plumage shot on the same day were undeveloped sexually, or nearly so. No evidence as to the age of the birds could be deduced from the sex organs then, nor did comparison of the skull granulation help.

While a discussion of moults will not be attempted in this paper it might be of interest to state that specimens were taken which plainly show a reversion to the yellow plumage from the red.

The first mated birds and the first nuptial flight were seen on February 19. Four or five birds at a time were frequently seen after this, chasing one another in circles around the tree tops and singing on the wing. Their song came as a delightful surprise in the silent snow-clad woods. Heard through a medium of clear frosty winter air, the song seemed to have the same fine quality as that of the Townsend Solitaire; a less sustained effort and lighter in tone, but with equal carrying power. As the mating season progressed, the song gained in volume and quality, until, by the end of March, it was common to hear the birds sing for twenty minutes at a time, I decided that it was the equal, in every way, of that of the solitaire, with all of the volume and sweetness of the latter's song.

In March, the courtship period being over, there was none of the chasing and singing on the wing observed in February. Solitary males sang from the topmost twig of the tallest tree, frequently a solitary yellow pine towering above the second growth firs. Often three or four birds could be heard at once —a most delightful chorus. In singing the bill is pointed straight up, chest expanded and breast, head, and flank feathers puffed out until the singer looks much larger than he really is. In the early morning the birds sang continuously, evidently serenading their sitting mates, and the song could be clearly heard on a still day at two hundred yards.

In searching for nests, it was soon found that the Pygmy Owl call would be of no service as the males would come from any distance, up to a quarter

of a mile, and in the heavy timber it was impossible to follow them with the eye on their return journey. The only methods that proved successful were to find a singing male and use the tree he perched in as a base, or else to walk slowly through the woods watching for birds carrying nesting material.

Several good prospects were located by these methods, but they were in trees that were impossible to climb. An abortive attempt at nest building was observed on March 1. This was on the top of a ridge overlooking Okanagan Lake where there were a number of second growth firs in small groups. In this case, a red male was seen at the top of a thirty-foot heavily foliaged fir, and as I approached he gave the characteristic alarm note, but did not fly. After waiting in concealment for five minutes, a female was seen to fly out from a dense piece of foliage ten feet below the top and disappear in the timber on the hillside. In a few minutes she returned with some nesting material in her bill which she carried to the top of another tree and there dropped. She repeated this a second time and then both birds flew off and did not return during the hour that I remained on the watch.

On March 19, while hunting on the same ridge, a nest in process of construction was found, about one hundred yards distant, and I concluded that its owners were the same pair as had been under observation some two weeks earlier. The nest was saddled on a thin branch near the top of a forty foot Douglas fir about fourteen inches from the trunk and was so well concealed as to be all but invisible from below. The female was under observation for half an hour, while she carried material to the nest, moulding the interior with her body after each trip, while her mate remained at the top of a nearby tree chirping excitedly.

Absence from the district prevented my return to the nest until April 9 and it then contained a newly hatched chick, and two eggs on the point of hatching. The ground color of the eggs was pale bluish green lightly flecked with lavender and with a wreath of lavender and ruddy-brown spots around the larger end. No measurements of the eggs were taken and unfortunately I was not successful in preparing them. The nest which is a very handsome one was presented to the Provincial Museum at Victoria. The body of the nest is composed of black tree moss (*Alectoria jubata*), dry grass and weed stalks; the outside, of fine fir twigs, those selected for the rim being decorated with little tufts of vivid green lichen (*Evernia vulpina*). The inside is well felted with black tree moss and contains a few pieces of fine grass and one breast feather of a Red-tailed Hawk. It is 110 mm. in diameter with an outside depth of 60 mm. and an inside depth of 30 mm.

On March 18, a red male was heard singing from the top of a second growth fir thirty feet high, one of a group on a steep hillside overlooking Okanagan Lake. At my approach he called excitedly until I reached the tree, when he flew some distance away. The nest was in the tree on which the male had been singing and was found without difficulty. It was on a lower branch ten feet above the ground and ten feet out from the trunk, in plain view from the ground. The female was sitting on one egg and did not leave the nest until the limb was shaken as I ascended the tree.

Two more eggs were laid by March 20, and, rather than risk having them destroyed by a squirrel or a Magpie, I collected the nest and the female. On dissecting the bird a fourth egg, too much crushed to preserve, was found in the oviduct. The eggs measure, in millimeters, 15x20, 15x20, 14x19, and are

a pale bluish green sparingly marked with dark brown spots (some of which are smeared) and with small lavender markings principally at the larger ends.

Another nest containing four young a few days old was found on March 18. This was in a tall rugged fir growing on the edge of a rocky bluff. The nest was situated eight feet from the trunk on a stout limb forty feet above the ground and was quite invisible from below. While hunting carefully over this hillside, stopping frequently for ten-minute intervals to watch for crossbills, the very quiet female flew into a tree a few yards from me and after a wait of five minutes flew directly to the nest. The young were naked save for small patches of filamentous gray down on the head and back. The bill and gape were conspicuously yellow. One of these nestlings was taken and an examination of the stomach showed a mass of softened fir seeds.

With the rush of migrants in the latter part of April and May, my interest in crossbills rather flagged, although it was noted that most of the birds were paired and very quiet. On June 14, small flocks appeared in the fringe of poplars along the lake shore in front of my house. This piece of brush is under almost daily observation and no crossbills had ever been seen there before. They were feeding on green choke-cherries and tiny salmon-colored lepidopterous larvae that crawled on the under sides of the poplar leaves. To reach these the birds hang head downward in the position they often assume when extracting fir seeds from the cones.

All day long small flocks were flying up and down the road and alighting in the trees. It is likely that they were moving to new feeding grounds as none were seen the next morning or during the days following. Probably sixty birds were seen during the day. Of these at least forty were red males in the moult and the rest were adult females and juvenals in the striped plumage.

Okanagan Landing, British Columbia, January 21, 1919.

NOTES ON THE NESTING OF TWO LITTLE-KNOWN SPECIES OF PETREL

By GEORGE WILLETT

WHILE stationed on Laysan Island, Hawaiian Archipelago, during the winter of 1912-13, I was much interested in observing the nesting habits of two species of petrel, *Pterodroma hypoleuca* and *Oceanodroma tristrami*. As I have never seen a published description of the nest and eggs of either of these birds, the following notes may be worth recording.

The White-breasted Petrel (*Pterodroma hypoleuca*) is an abundant nesting bird on Laysan, Lisianski and Midway islands, Pearl and Hermes Reef, and French Frigate Shoal. It is the most abundant nesting bird on the Hawaiian Bird Reservation, there being on Laysan Island alone, probably not less than 50,000 pairs. It was already present on the island at the time of our arrival, December 22, 1912, and from this time until January 7 following, the air at night fairly swarmed with the birds. After this date, while still abundant, the numbers in the air decreased considerably as the birds began to incubate their eggs. Laying commenced the first week in January and was at its height about January 20.

The nesting burrows of this petrel were in sandy soil in nearly all the drier parts of the island. They were generally from six to ten inches in diameter at the mouth, and seven or eight feet in length; it is very probable that part of this extensive excavation is done by the Wedge-tailed Shearwater (*Puffinus cuneatus*), as these birds are known to use the same burrows later in the season. The shallow nest cavity at the end of the burrow is generally fairly well lined with grass and leaves. An exceptional nesting site of the species was noted on January 25, when a nest and egg were found under an overturned basket near the cabin. The single egg is pure white, unmarked. Six typical eggs measure (in inches) as follows: Largest, 1.98x1.45; smallest, 1.85x1.42; average, 1.91x1.44.

Heavy sandstorms during early February filled up several thousand burrows of this species, smothering many of the incubating birds. While walking among the colonies at this time, birds were frequently found imprisoned in sand at the mouths of burrows, often with their heads above the surface and still alive.

The Sooty Petrel (*Oceanodroma tristrami*) at the time of our visit to the islands, was considered one of the rarest of the petrels, being known from a very few specimens. We were therefore much pleased to find a substantial breeding colony on Laysan Island, also a smaller one on Pearl and Hermes Reef. A series of the birds was secured and, as little has been previously published regarding the species, the measurements obtained may be worthy of record. It will be noted that the females are appreciably larger than the males, in most instances this being clearly perceptible in living birds.

The average measurements (in inches) of six breeding males follow. Length, 9.98; wing, 7.09; tail, 4.07. The largest measures: Length, 10.20; wing, 7.25; tail, 4.27. The smallest: Length, 9.40; wing, 6.68; tail, 3.77. Six breeding females average: Length, 10.39; wing, 7.43; tail, 4.33. The largest measures: Length, 10.92; wing, 7.61; tail, 4.58. The smallest: Length, 10.15, wing, 7.32; tail, 4.25.

The nesting colony of the Sooty Petrel on Laysan Island was situated along the shores of the shallow salt-water lagoon that lies approximately in the center of the island. A rise in the water of this lagoon, caused by heavy rainfall February 6, flooded and destroyed several hundred of the petrels' nests, as well as numerous nests of the Laysan Albatross (*Diomedea immutabilis*). One of the sand storms previously mentioned, coming two days later, also destroyed many nests by filling the burrows with sand. Probably at least half of the petrel colony was wiped out by these two catastrophes.

The burrows of the Sooty Petrel were much smaller than those of the White-breasted, averaging about five inches in diameter and from two and one-half to three and one-half feet in length. In most instances they were quite crooked, resembling in this respect nesting burrows of *Oceanodroma leucorhoa* or *O. furcata*. The nest at the end of the burrow was composed of rootlets, weedstems and leaves. The eggs, deposited mostly during the first two weeks in January, are typical of the genus *Oceanodroma*, though, of course, larger than those of any of the genus along our Pacific coast, being approached in size only by those of *O. macrodactyla*, of Guadalupe Island. They are creamy white in color, more or less faintly dotted, scrawled or wreathed, with purplish and pinkish brown, mostly around the larger end. Average measurements (in inches) of six eggs are: 1.52x1.07; largest, 1.63x1.08; smallest, 1.48x1.07.

Los Angeles, California, December 6, 1918.

BIRD NOTES OF A STORMY MAY IN COLORADO SPRINGS

By EDWARD R. WARREN

WITH ONE PHOTO

THE MONTH of May, 1917, in Colorado Springs, was, apparently in common with the rest of the country, an abnormally cold, stormy one. Many cloudy or partly cloudy days, with low temperatures and much rain and even snow, prevailed all through the month. Once the maximum temperature was above 80—81, on the 16th. On the 15th, 17th and 18th the maximums were 77, 76 and 76, respectively. On no other day did the thermometer go above 70. The lowest minimum was 22, the highest 51, the latter on the 18th.

Fig. 17. Scene in Monument Valley Park, Colorado Springs, May 5, 1917. Lesser Scaup Ducks in foreground.

I had not been devoting as much time as usual in April to bird work; but when, on the morning of May 5, I woke up and found some eight inches of heavy wet snow on the ground, I decided it was time to see what was going on among the birds. I knew this storm, coming at the migrating season, might cause suffering, and there was a possibility it might also make delay in the arrival of some of the species. About my house the most noticeable thing was the great number of Robins, these searching for worms wherever they might luckily find a bare spot. The snow was so saturated with water that it melted readily, and the plight of our red-breasted friends was thus not as bad as it might have been, though many of them evidently thought it bad enough, as

they perched in the snow-laden trees with their plumage fluffed out to its fullest extent trying to keep warm.

It was the middle of the forenoon before I could leave home to visit the Monument Valley Park a short distance away. By this time the roadways were getting bare, and were surfaced with mud and water, though our gravelly soil does not usually make much mud. On my way to the park in these roadways I found Meadowlarks, and Vesper, Lark and Chipping Sparrows (the western form of each, of course) busily seeking food, and evidently finding it, judging from their actions. Arriving at the park I found an expanse of white; none of the paths had been broken, and few or no foot passengers had been along. Brewer Blackbirds were about, White-crowned Sparrows were perched in trees and bushes; they did not appear to care about going out to rustle in the bare roadways.

It was about a small pond that there was the greatest amount of life. On the water were seven Lesser Scaups, and they were quite unconcerned, feeding or swimming about or preening themselves as they chose. A little later in the morning I also saw Gadwalls, Shovelers and Baldpates; altogether there were some twenty odd ducks on the pond at one time. Along the shores of the pond Say Phoebes were abundant, continually flying out over the water after insects, though one would have thought it a mighty poor day for flycatching. Myrtle Warblers were also common and emulating the efforts of the Phoebes, though also working the bushes and ground along the shore. A Kingfisher was also there, occasionally dropping into the water with a splash. For such a wintry scene, bird life was decidedly abundant and active. Besides the Myrtles a few Orange-crowned and Audubon Warblers were present, the former confining their activities to the trunks and branches of the trees which they were carefully working. I ought to state that it is really very unusual for Myrtle Warblers to be so abundant here. I have never before seen as many as on this occasion, and usually the seasons slip by without any being noted. A Western Yellowthroat was also on the warbler list.

A little way from the pond, and on the bench above it, is a reservoir belonging to the park. On this were four Lesser Scaups and eight Wilson Phalaropes, and along the shores were more Say Phoebes and Myrtle Warblers; while flying about over the water were several Rough-winged and Barn Swallows, which looked rather unseasonable; for there was a cold north wind with flying snow. I traversed a fair portion of the park that morning, and in the afternoon walked the whole length of it, some two miles. One bird which was noticeable was the Townsend Solitaire, of which I saw several, though it is usually rare in the park. I subsequently saw one or more on my almost daily visits until the 17th of May.

The beautiful Mountain Bluebirds were present in flocks. It is possible these spring storms bring more suffering to this species than to almost any other, they seeming to have much difficulty in obtaining food when snow is on the ground.

The following day was cloudy and bird conditions much the same, though the snow had largely melted. Snow was falling and melting almost all the day of the 8th, and birds were working hard for food. Another little flock of Phalaropes was at the reservoir and a flock of Chestnut-backed Bluebirds was in the park in addition to the other species. The latter were also seen the next day which opened with an inch of snow on the ground and was cloudy most of the time.

On every one of these days a little flock of Lesser Scaups was on the pond, apparently the same birds, as there were five males and two or three females. These birds were quite tame, that is, they paid little attention to anyone, and fed and swam about unconcernedly. The occasional Gadwalls and Spoonbills were much shyer and disliked having people about, often leaving when passersby approached. The morning of the 10th I found three Wilson Phalaropes on the pond with the ducks. They were apparently feeding on insects flying close to the surface of the water, as the birds swam about with heads up and bills open, making darts here and there as if catching something. I did not see one take anything from the surface during the considerable time I watched. Though they kept quite well out from the shore most of the time, it did not appear to be from fear, as they occasionally came boldly quite close to where I was. A female Black-crowned Night Heron was seen then and was noted off and on for several days, usually about one particular grove of cottonwoods. To my great surprise I saw a male Evening Grosbeak, usually only a winter visitant, and an irregular one at that; I saw none the preceding winter, nor did I hear of any about town.

The following day, the 11th, the first Black-headed Grosbeaks and House Wrens were seen, the latter about a nesting site which has been used for several years. The Grosbeaks were about on time, but the Wrens were a trifle late; I think they commonly arrive from three to six days earlier than this. From this date on for a week or more the weather improved somewhat until the little hot spell from the 15th to the 18th was past; then more bad weather set in, lasting until the end of the month.

On the 13th the first Green-tailed Towhees and Yellow Warblers were noted. The former should have been here by May 1 and the latter by the 7th. This day was also somewhat notable as being the first when the Scaups were not on the pond, nor were they seen again, though Gadwalls were noted on the 15th. On the 14th Clay-colored and Brewer Sparrows were about in considerable numbers. An Arkansas Kingbird was seen. I had thought possibly I saw one on the 5th; if I did, the bird thought it wiser to go south again. The present date is just a bit late. The first Catbird was also seen, the date being about normal.

No Say Phoebes were seen about the park after the 9th. As soon as the weather had moderated so that they could obtain food almost anywhere they evidently scattered to their usual haunts. On the 15th the first Kingbird was observed, like the Arkansas, a bit late. The first Bullock Oriole, about five days late. A Red-headed Woodpecker was seen on the 17th, somewhere about the normal date for the species.

When we come to analyze the above data it would appear that six species, namely, Kingbird, Arkansas Kingbird, Bullock Oriole, Green-tailed Towhee, Yellow Warbler and House Wren, were all late in arriving, with the possible exception of the Arkansas Kingbird, while the Red-headed Woodpecker and Catbird came about on time; but their normal arrival dates being toward the middle of the month they would not be as apt to be affected by the storm. These delayed species may have met the storm and cold weather to the south of here and waited, and then come on when the conditions improved, which was the case when they finally did come. Observations over a larger territory in the region would have been better, for there are several species of birds which visit the park only occasionally and usually not on their first arrival, but straggle there later.

Aside from the migrations, the most interesting observations, I think, were on the Say Phoebes, which stayed about feeding on insects over the surface of the water, and then disappeared as soon as the weather became fairly good. The little flock of Scaups staying so long on the pond was also somewhat remarkable. As I have remarked above, the number of Myrtle Warblers was extremely unusual.

Colorado Springs, Colorado, January 6, 1919.

LOSSES SUFFERED BY BREEDING BIRDS IN SOUTHERN CALIFORNIA

By H. ARDEN EDWARDS

ANY EFFORTS at estimating the probable increase or decrease of our native birds must take into consideration the very considerable loss sustained by them during their breeding season. A record of such known losses shows a surprising percentage of eggs and young birds destroyed during any one year, and the careful observer will at once notice a certain number of contributing causes which are fairly constant.

Taking these different factors in the order of their importance, we find that predatory mammals and birds hold first place. Preëminent among mammals is the common house cat; but the weasels, skunks, and coyotes also figure importantly. When I write predatory bird, my mind does not picture at once some noble falcon or swift flying raptor, but rather that skulking robber of the woodlands, the California Jay. Next as causes of loss come the rare storms of wind and rain, which, while of short duration, bring widespread damage, especially to nests and eggs. Thirdly, there is the ignorance and carelessness of man, which adds no small amount of destruction to the general total. And lastly, we may include the partial sterility of the birds themselves. I say partial, as I have never come across an instance where an entire clutch of eggs was lost from this cause.

To return to the first factor, we will naturally expect to see the preponderance of effect exerted here. Nature is always destructive in a constructive sense. Everything is sooner or later destroyed that something else may live. Death is written large upon every bird. The blossom only fulfills its purpose when it has faded and made way for the perpetuating seeds. So it is in bird life also; a bird may fulfill a purpose when it furnishes a meal for a wild animal; but when it falls prey to a tame cat, I fear Nature has been cheated.

Nature surely intends that no one species shall prey to excess upon some other species; therefore, the specialization which is evolved in the way of protective coloration, and defensive organs and habits. Take, as a specific instance, the orioles. The South American branches of this family have developed some remarkable methods of defense, such as that of the Caciques—which suspend their nests only in trees containing the nests of a very pugnacious species of wasp. Gadow tells us that in Mexico certain orioles have learned to tie their nests to the telegraph wires, where it is almost impossible for anything without wings to reach them. Our own North American species of oriole have learned to construct nests which insure a degree of safety, even from the marauding owl.

Now if Nature intended owl to eat oriole to excess I am sure the owl would be specialized to a point where the protective nest of the oriole would cease to be a hindrance. But when I see the amount of damage done by the jay, I feel as if Nature had slipped a cog somewhere; for, so far as I can see, the majority of birds have no means of protection against this arch robber.

I believe that nests of the type of those of the Bush-tit and Cactus Wren are primarily for protection against avian thieves; for certainly a Cactus Wren's nest would offer but slight obstacle to creeping reptiles, and none at all to the various species of rats and mice which are common in most cactus belts. To speak from personal knowledge: on the Mohave and Colorado deserts, and particularly the Mexican deserts, the large desert wood rats and ground squirrels cause the destruction of many nests. At Ensenada, Lower California, I examined colony after colony of the Bryant Cactus Wren, and found that a large percentage of the nests seemed to have been torn out by some small mammal.

In the case of the jay, as if to offset in some degree its ability to create mischief, Nature has endowed it with a cowardly disposition, and the average small bird when aroused will put it to flight. I imagine the sudden appearance of an angry wren or bush-tit at the door of its nest would rout the bravest jay. I think that the jay does most of its stealing of eggs and young when the parents are away. In the case of some of the very small birds it probably tries intimidation. I came across one instance of this kind this past spring. My attention was attracted by the actions and excited calls of a pair of Western Gnatcatchers in a clump of live-oaks. Approaching under cover of some adjacent bushes, I was able to see the cause of the disturbance. It was a jay, and he evidently had his eye on the contents of the dainty little nest of the Gnatcatchers near by. Heedless of their protests he was working his way nearer and nearer, but just when anticipation was merging into realization I shattered his hopes with a fusillade of rocks. It is a safe rule never to approach a nest openly if a person be in a locality where jays are plentiful. To do so spells certain ruin for that particular nest.

The crow must also be included as a destroyer of eggs and young birds, but it is harder to catch in the act. Personally I know of but few instances of destruction wrought by crows where the evidence was conclusive. Years ago, in Illinois, I was much amused when I caught a crow in the act of eating the eggs in another crow's nest; if this wasn't exactly a case of crow eat crow, it was at least a case of poetic justice. Another instance of its egg eating propensity was the destruction by a crow of a set of eggs of the Red-bellied Hawk in Los Angeles County, California. The remains of shells and contents, and a tell-tale black feather, told the story. This was in a locality where crows were nesting, and were very plentiful.

A storm in the late spring of 1918, although lasting but a few hours, was of such intensity and accompanied by such wind, that it caused the destruction of innumerable nests, especially pendant ones. Another cold, heavy rainstorm lasting several days visited southern California in June of the same year, at a time when normally all rains are over for the season. It played havoc with the hummingbirds and vireos especially, as they were at the height of their breeding season. While these storms cannot be classed as a constant factor in this part of the state (and I fancy nesting periods are pretty well adjusted to

seasonal conditions elsewhere) they cannot be totally disregarded in the general summing up of results.

A great many instances of loss through ignorance of man might be named. In this section the Valley Quail has a penchant for placing its nest in the orange groves. Many nests are destroyed in such places when the orchard is cultivated.

Loss through sterility is probably less than from other causes. Yet every active collector can remember scores of instances in this category. A striking example is that of a pair of California Woodpeckers which nest every year in a large live sycamore near my house. The first set taken from them contained four eggs, three of which were infertile. Another set, the following year, contained one fertile and two infertile eggs. The next year the nest had one young bird and three infertile eggs, while sets numbers four and five, in succeeding years, each had five eggs, four in each set being infertile. This is an extreme case, but I believe that the Picariae are more subject to this condition than most avian groups.

I have only touched upon a few high lights of this interesting subject, but the student of conservation will find food for thought and agree with me that, where Nature takes such toll, it requires but little to tip the balance in the wrong direction. A list of instances where losses were suffered by breeding birds in southern California as taken from my notes for the year 1918, follows.

Colymbus nigricollis californicus. American Eared Grebe. A common loss is occasioned by eggs being kicked from the nest as the bird gets on or off. In every breeding colony I have examined, numbers of eggs could be found at the bottom of the pond about the nests.

Sterna antillarum. Least Tern. Cats are the greatest causes of loss with this species, I believe. I have found numerous deserted eggs and remains of birds among the colonies, and W. Lee Chambers mentioned a case where cats were practically exterminating an entire colony near Venice, California.

Ægialitis nivosa. Snowy Plover. As with the Least Tern, cats do much damage.

Lophortyx californica vallicola. Valley Quail. Two nests were destroyed by young children, a number of others in orange groves, and one by a house cat which ate the female bird.

Lophortyx gambeli. Gambel Quail. Wright M. Pierce and myself found a nest of this species in the Coachella Desert, from which the parent had been eaten by some animal, judging from a number of broken eggs and other evidence present.

Melanerpes formicivorus bairdi. California Woodpecker. Sterility common.

Colaptes cafer collaris. Red-shafted Flicker. Sterility common. One set of six contained three addled eggs.

Chordeiles virginianus hesperis. Pacific Nighthawk. Sterility. One set of two had one egg addled.

Archilochus alexandri. Black-chinned Hummingbird. Nine nests were destroyed by jays after one egg in each case had been laid, two were destroyed by man, and ten by a heavy storm.

Calypte costae. Costa Hummingbird. Thirteen nests were all destroyed, presumably, by jays, as several jays were caught in the act. A majority of these nests were situated in cactus and were rather conspicuous. Six nests were ruined by a heavy rainstorm.

Calypte anna. Anna Hummingbird. Four nests were destroyed by jays.

Contopus richardsoni richardsoni. Western Wood Pewee.

Empidonax difficilis difficilis. Western Flycatcher. Several nests were destroyed by storm. I do not believe the rains did much damage, but undoubtedly they delayed the breeding season several weeks.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird. I found a nest of this species at Baldwin's Lake, Big Bear Valley, which was occupied by a large Garter Snake.

The snake was distended from eating, presumably, the eggs or young, but made its escape before I could make certain.

Agelaius phoeniceus neutralis. San Diego Red-wing. A large colony nested in a wheat field. Their nests probably all were destroyed, as the grain was ready to reap and the nests contained one or two eggs each.

Euphagus cyanocephalus. Brewer Blackbird. Seven nests were destroyed by people near a house: the birds annoyed a sick person.

Carpodacus mexicanus frontalis. House Finch. Numbers of these nests are torn down around dwellings, and on the deserts small mammals cause a heavy loss.

Astragalinus tristis salicamans. Willow Goldfinch. Two nests of this species were found which had been taken possession of by white-footed mice. The eggs were still in the bottom of the nest. This happens commonly.

Astragalinus psaltria hesperophilus. Green-backed Goldfinch. Newly hatched young were found dead under a nest after a wind storm.

Junco oreganus thurberi. Sierra Junco. Sterility seems to be common in this species, particularly in certain sections where the nests are placed in wet moss and fern banks, though perhaps loss is due to chilling.

Melospiza melodia cooperi. San Diego Song Sparrow. A number of nests found had been taken possession of by white-footed mice.

Pipilo maculatus megalonyx. San Diego Towhee. Four eggs disappeared over night. The nest was torn out, probably by an animal of some kind.

Pipilo crissalis senicula. Anthony Towhee. Fourteen nests were destroyed. Of these, one was destroyed by a gopher snake, two by jays, two by man, and the rest by unknown causes. This species suffers heavily during the nesting season. One reason for this is that the actions and calls of the birds attract attention to their nests.

Passerina amoena. Lazuli Bunting. This is another species whose home the white-footed mouse frequently preëmpts. The eggs may usually be found buried in the bottom of the nest.

Petrochelidon lunifrons lunifrons. Cliff Swallow. Practically as many nests as there were pairs of birds were destroyed in Claremont, as the birds persisted in nesting on the college buildings, where they were a decided nuisance. Repeated destruction of their nests, and dousing the birds by means of fire hose, did not discourage them. I suggested letting them complete their sets before destroying the nests. This was done, whereupon they removed to other buildings where they were unmolested.

Vireo solitarius cassini. Cassin Vireo. Four nests were destroyed by rain and windstorm. Mr. Pierce reports others destroyed by the same cause.

Dendroica nigrescens. Black-throated Gray Warbler. One nest was torn out, cause unknown.

Wilsonia pusilla chryseola. Golden Pileolated Warbler. Two nests, in which sets were never completed, were found in a marsh.

Mimus polyglottos leucopterus. Western Mockingbird. Three nests were destroyed by jays.

Toxostoma redivivum pasadenense. California Thrasher. The sets disappeared from seven nests. One pair nested near a house, one egg was laid, and hatched. When the young bird was full grown, another egg was laid in the same nest, and also hatched. Later a new nest was built in another tree, and again one egg was laid. This fell prey to a jay.

Thryomanes bewicki charienturus. San Diego Wren. Two nests were destroyed, one by man and one by a snake or small mammal, as it was inaccessible to anything else, being under a large pile of cactus.

Chamaea fasciata henshawi. Pallid Wren-tit. Three nests were destroyed; cause unknown.

Psaltriparus minimus minimus. Coast Bush-tit. Eleven nests were blown to pieces by a windstorm; more were reported to me by others.

Hylocichla ustulata ustulata. Russet-backed Thrush. One nest was destroyed.

Claremont, California, January 22, 1919.

OLIVE THORNE MILLER

By FLORENCE MERRIAM BAILEY

WITH PHOTO

ONCE AGAIN California is called upon to mourn the loss of one of a noted circle of popular bird writers from the east who found within her gates, amid her myriad birds and flowers, rare satisfaction and ministration for their declining years. Bradford Torrey, whose last days were spent in Santa Barbara, died on October 7, 1912, at the age of sixty-nine, leaving eleven bird books; and Mrs. Harriet Mann Miller, better known by her pen name of Olive Thorne Miller, whose last years were spent in Los Angeles, died on December 26, 1918, at the ripe age of eighty-seven, also leaving eleven bird books as her contribution to bird lore. Both were members of the American Ornithologists' Union, Mrs. Miller having joined in 1887 and been made a Member, as Mr. Torrey was, when the class of Members was established in 1901. To those familiar with the writings of these two there is still further parallelism, for in their books we find much the same leisurely literary quality, the charm of humor, and the pervading vital interest in the birds whose ways they are portraying.

But while Mr. Torrey was well satisfied to accept the Rambler's Lease, and in his delightful discursive essays, such as those in Nature's Invitation and Field Days in California, man and bird figure with equal interest, Mrs. Miller's greatest happiness was to find the one bird she had perhaps traveled hundreds of miles to see, and hour after hour, day after day, and week after week, by patient, tireless study, note-book in hand, master the secret of that bird's home life. As she wrote, prefacing her chapters on the Kingbird's Nest and Three Little Kings, which represented nearly two months of field work, "However familiar the bird, unless the student has watched its ways during the only domestic period of its life—nesting time—he has still something to learn. In fact he has almost everything to learn, for into those two weeks is crowded a whole life-time of emotions and experiences which fully bring out the individuality of the bird. . . . Moreover, to the devotee of the science that someone has aptly called Ornithography, nothing is so attractive. What hopes it holds out! Who can guess what mysteries shall be disclosed, what interesting episodes of life shall be seen around that charmed spot?"

For twenty years she spent from one to three months in the country watching birds, visiting various parts of New York, New Jersey, North Carolina, Maine, New Hampshire, Vermont, Ohio, Michigan, Utah, Colorado, and California; accumulating the material which appeared in With the Birds in Maine, Upon the Tree Tops, True Bird Stories from My Note Books, In Nesting Time, Little Brothers of the Air, and A Bird Lover in the West. In New York and Utah I was with her and found that her one thought was to make an exhaustive study of birds unconscious of observation, a method which gave peculiar value to her work. To me, at that time, birds were companions from whom I wanted some response, but when I answered their calls and tried to get them to talk to me in her presence, I felt rebuked; she would never intrude upon them in that

way. The only time that I ever saw her willingly show herself to a bird was when she heard a Veery Thrush give its cry of alarm. She was seated in a comfortable piazza rocking chair at the moment, but sprang up and waded ankle deep through the soft plowed ground of a wide field between the house and the woods to go to its rescue.

Ordinarily when we went to the woods, she would steal in through the bushes in her leaf-colored gown, open her camp-stool cautiously at the foot of a tree whose dark trunk would help conceal her, pull down a branch before her and, with note-book ready, carefully raise her opera-glass and focus it upon the nest she wanted to study. And there she would sit in silence, stoically defy-

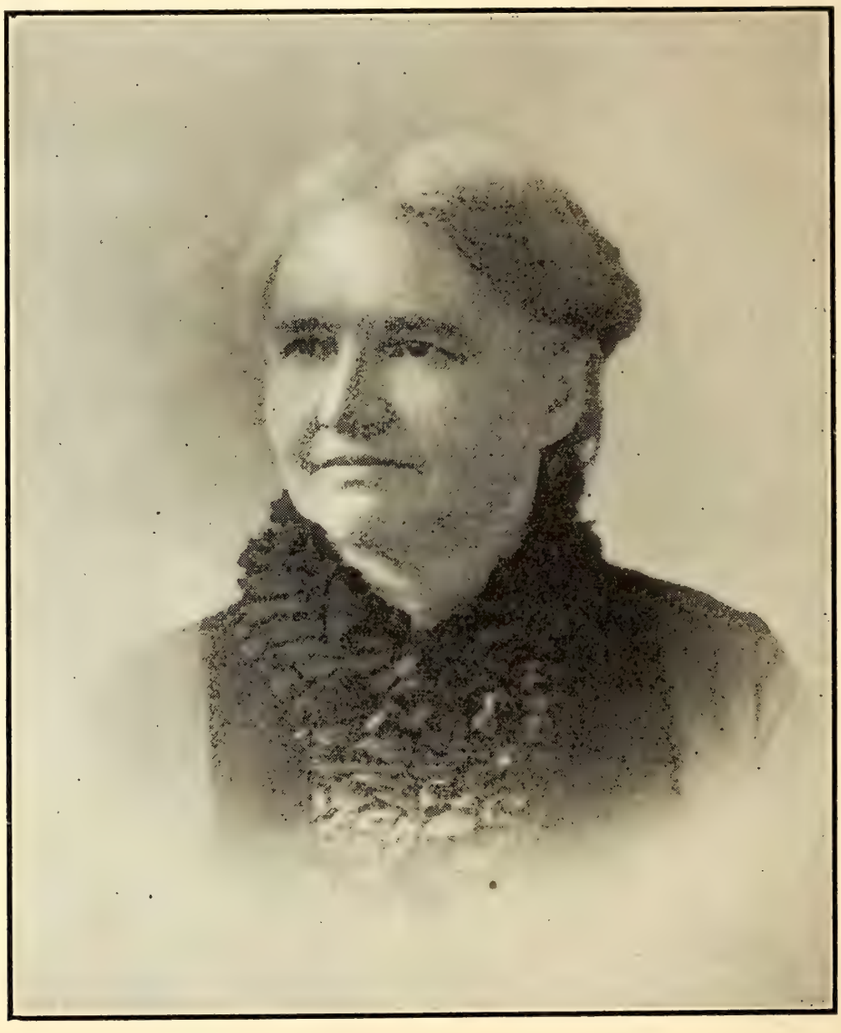

Fig. 18. Olive Thorne Miller.

ing tormenting gnats and mosquitoes, patiently waiting and watching to see what might befall.

Alert, keen-eyed, and conscientious to the flit of a wing, she kept a firm rein upon herself, never letting her imagination run away with her, allowing herself to generalize, or attribute her own thoughts and feelings to the bird she was watching; conscientiously writing up her field notes in detail every day, preparatory to putting them in final form for publication during the months following each field season. Scrupulously truthful and enthusiastically in earnest, she was indeed an ideal reporter of bird ways. If all observers had her spirit and devotion, what could we not hope for in addition to our knowledge of little known life histories!

In the summer of 1891, Mrs. Miller, at my solicitation, went up to Locust Grove, New York, to study the Hermit Thrush on his breeding grounds in my home woods. Board was secured for her in the only farmhouse near the woods, but when I found her in her cramped bare white-washed room with her box of books standing in the middle of the floor because there was no other place for it, I was filled with misgivings, not lessened by the memory of the luncheon in a fashionable New York woman's club to which she had taken me a few weeks before. I soon knew her better, however. With a table for her books and her indispensable rocking chair to write in, she became enthusiastic about her room, for through a closed blind she could watch the unsuspecting birds promenading up and down the fence and feeding in the bushes outside. Her books surprised me. They were all either on birds or nature, ranging from Coues' *Key* and the latest good bird books—she said she would like to have a new one every week—to the nature poems of Emerson, Sill, and Sidney Lanier. Twenty-four years later she wrote "That summer at your old home is a lasting source of pleasant memories to me. I can recall the road through that delightful woods almost *foot by foot* with charming details all the way, from the Thrushes' nest near the entrance to the Cuckoo's nest near the exit, and all the delights between." To me the summer, as the one spent with her in Utah in 1892, is rich in cherished memories, for Mrs. Miller was the most delightful of field companions. No beauty of forest or meadow, sky, cloud, or mountain escaped her, and she loved birds as she did nature. When, fresh from college, I saw her first, her hair was nearly white, but the discrepancy in our ages never seemed to occur to me, for she had the spirit and enthusiasm of youth, and we worked side by side as sisters.

The familiar question, how did she come to be interested in birds, is easily answered superficially, though no one can say how much responsibility the old revolutionary Mann ancestor of Bunker Hill fame had in the bend of the twig. While her first bird book was not written until 1885, as a mother of four children she had learned the educational value of true stories and especially of nature tales and had previously published several juvenile books dealing with birds and animals—Little Folks in Feathers and Fur being perhaps one of the best known. Then, her children being grown, and her time at her disposal, a fortuitous circumstance gave a new angle to her nature interest. An old friend from Chicago, the twenty-year home of her married life, Mrs. Sara Hubbard, a pioneer bird worker, came to visit her in her Brooklyn home, and together they went to Prospect Park, then as now rich in birds, and she caught the enthusiasm which lasted throughout her remaining years, inducing her to lecture, and to give bird classes as well as to write a half shelf full of bird books.

In her field work, special birds had a peculiar attraction for her, among them the Solitaire and the Phainopepla. "How I envy you the music of the Solitaire!" she wrote me in answer to a letter from its breeding grounds. "It is the most wonderful song in the world, I think." And when after visiting her married son in California, she was about returning to Brooklyn, she wrote that if she could find the Solitaire in Colorado she would give up her overland ticket and perhaps spend the rest of the summer studying him.

The Phainopepla was the burden of her song for years, associated as it was with her thoughts of California, which was her Mecca long before she was able to make it her home. "I am suffering from my old malady, California fever," she wrote me. And from Bailey Island, Maine, in 1902—"You see I

am back in my old haunts again, but I have left my heart, or a large part of it, in southern California. I could not bear to come away! I shall *never* be satisfied till I go back, and I want to *stay*. I don't know exactly what was the overpowering fascination for me, but it was there. . . . There is a most delightful place, full of Phainopeplas and other birds, in Pasadena, The Arroya; I got a family on The Arroya Drive to take me to board, a carpenter's family, and I had a simply glorious time there." A previous letter written twenty-four hours after her arrival in Pasadena tells its enthusiastic story. "My dear, he was the *first* bird to greet me! He came onto a beautiful pepper tree in front of my window and called a husky sort of imitation of the red-wings' 'o-ka-lee.' I was delighted of course, and I have spent this morning watching a pair. . . . Of course I am talking about the Phainopepla, the only bird for me just now. The place is in Pasadena, but has plenty of ground and overlooks a valley where birds abound. There's a beautiful chain of mountains across the back. It is simply glorious! And I am as wild over the flowers as over the birds. I reached here yesterday and I have stayed in the house only long enough to eat and sleep. . . . I hope you are used to rhapsodies. . . . I got too full and had to write to one who knows."

Some years after the death of her husband, Mr. Watts Todd Miller, a New Yorker like herself, and the marriage of her oldest son and daughter, the day finally came when her hopes and longings were realized and she was able to go back to California to live; and it was on the bank of that same Arroya "full of Phainopeplas and other birds" that her daughter, Mary Mann Miller, also a lover of birds, built the cottage suggestively called El Nido, half hidden by its vines and trees and flowers, which was to shelter her for the rest of her life.

By this time, Mrs. Miller had already far exceeded the allotted span of three-score-years-and-ten, but two more bird books, The Bird our Brother, and The Children's Book of Birds, and some half dozen of her delightful juvenile books, written now from both the mother's and grandmother's points of view, came from the ever-ready pen of the indefatigable worker; making in all twenty-four books and a bird booklet, published mainly by the Houghton Mifflin Company and E. P. Dutton, in addition to about seven hundred and eighty articles published in various papers and magazines.

One of her earlier books, The Woman's Club, was written when she was devoting much of her winter time to club work in Brooklyn and New York, and shows the same earnest purpose that underlay all her work; for she felt that to women denied college training the woman's club afforded not only a means of intellectual development but a help to a broader, wiser living. In her bird work, in the same way, she was inspired by a reverent belief in the uplifting, ennobling influence of nature.

When from failing eyesight she was forced to give up her work, her keenly active mind was fed from books read aloud in the family circle—always one of her greatest pleasures—and she still had the joy of being in her beloved land of sunshine and flowers, or as she most often referred to it in her letters, "the Land of Heart's Desire". Even then, in one of her last letters, there was a touch of the old enthusiasm for birds, for in the summer a Screech Owl, as she wrote "an innocent little Screech Owl who doesn't screech but utters a gentle call which I love to hear," took up his residence in the eucalyptus trees near El Nido. "Ah, if only I had eyes to watch him! I never had such a

chance,'' she exclaimed, for to her, her old work would always be, as she expressed it, ''the most delightful work in the world—studying bird life.''

Washington, D. C., January 27, 1919.

BIRD RECORDS FROM THE SACRAMENTO VALLEY, CALIFORNIA

By ALEXANDER WETMORE

FOR MOST of the period between August 17 and October 17, 1918, I was occupied in field work in the Sacramento Valley, California, between Marysville, Maxwell and Tehama, and, though not engaged primarily in the collecting of specimens, had daily opportunity for observation of birds. Considerable areas in this region are now utilized for the culture of rice, and the heavy irrigation necessary for this crop has made a condition favorable to water haunting birds over considerable tracts that formerly were entirely dry during the summer months. Small fishes brought down in the large irrigation canals were abundant in the flooded rice fields, and attracted many Great Blue Herons, Terns, Kingfishers and others, while water boatmen and aquatic insects of similar habit drew other smaller birds. The following brief notes of occurrence are those that seem unusual or of interest. For general information on the occurrence or range of birds in this area I have referred to J. Grinnell's list of California birds (Pacific Coast Avifauna, no. 11, 1915).

Dendrocygna bicolor. Fulvous Tree-Duck. A flock of 18 observed October 12 on the property of the Sacramento Outing Club, west of Live Oak.

Sterna caspia. Caspian Tern. Individuals of this species were observed near Maxwell on August 21, and September 6, 7 and 8. On September 7 a bird, in juvenal plumage, that was resting on a levee near a road, allowed me to approach within fifteen feet without becoming alarmed. Later I heard it giving the high-pitched whistled call characteristic of young individuals of this species, a note entirely different from the harsh, raucous screams of adults.

Ixobrychus exilis exilis. Least Bittern. One was flushed from a growth of cattails in a rice field near Butte Creek, west of Gridley, on September 14.

Herodias egretta. American Egret. This species was of common occurrence in suitable localities in the rice fields and adjacent flooded areas. These herons were observed first near Maxwell on August 18. On the following day seven were seen in one flock and four in another, while solitary individuals were observed elsewhere. A flock of seven frequented one area here for two weeks. Near Butte Creek, west of Gridley, fifty were seen in one place scattered about over a rice field or in pools of water near by, the clear white of their plumage standing out in pleasing contrast against the green of the grain. Near Maxwell thirty were observed in one flock on September 8. Others were seen on Butte Creek, west of Live Oak, on September 10, and farther north in the same region, on September 15 and 17. From this time on they were less numerous. Two were noted near Maxwell on September 25, and two others seen in the same region on September 29 were the last that were observed. It would seem from these records that the Egret is increasing in number in this region. E. D. Ricketts, State Deputy Game Warden, stated that white herons breed in a rookery on the Butte Creek sloughs, so that it seems possible that these may be Egrets. Adult birds were observed on several occasions, on extensive mudflats, driving immature individuals about, harrying them with vicous thrusts of their bills, and harsh squawks, as these herons do when they have abandoned their young to their own resources in securing food: an observation, however, of uncertain value as an indication that these young had been reared in the vicinity, as all were fully grown and strong on the wing.

Egretta candidissima candidissima. Snowy Heron. One was seen in a rice field four miles east of Maxwell on August 21, and another west of Live Oak, on Butte Creek, August 24. A third bird was observed near Maxwell on September 8. In all of these cases these herons were in company with the larger Egrets.

Lobipes lobatus. Northern Phalarope. On August 18 these birds were abundant in the region east of Maxwell, and remained fairly common in pools in the rice fields in the area between Maxwell and Willows until September 8.

Ereunetes mauri. Western Sandpiper. Common near Maxwell from August 19 to October 3.

Limosa fedoa. Marbled Godwit. Seen in small numbers east of Maxwell from September 5 to 8.

Aluco pratincola. Barn Owl. A dead Barn Owl was found in a road near Maxwell on August 21, and another on October 2. Both had been killed by striking wires, rather an unusual accident with such night prowlers as these. Another Barn Owl was flushed from an oak west of Live Oak on August 24. On September 15, west of Gridley, one was seen circling low over a rice field in bright sunshine, about three in the afternoon, and another was shot in a grove. The birds were apparently fairly common in occurrence here. Grinnell (Pac. Coast Avifauna, no. 11, 1915, p. 69) has recorded them in the Sacramento Valley only as far north as Woodland.

Chordeiles virginianus hesperis. Pacific Nighthawk. One observed near Live Oak on August 26.

Sayornis sayus. Say Phoebe. One seen near Stonyford on October 5.

Pica nuttalli. Yellow-billed Magpie. This interesting species was common among the oaks in a narrow area near the center of the Sacramento Valley between Marysville and Tehama. It was not unusual to find them in flocks of a dozen or more. Several were taken.

Biological Survey, Washington, D. C., January 15, 1919.

NOTES FROM THE FEATHER RIVER COUNTRY AND SIERRA VALLEY, CALIFORNIA

By JOSEPH MAILLIARD

CASTING around for a profitable locality in which to pass a good portion of the spring months of 1918, the region around Blairsden, on the Feather River, Plumas County, California, seemed to combine many desirable qualities together with the additional attraction of having been little, if ever, worked over from an ornithological standpoint. On this basis of reasoning several weeks were passed in this vicinity, between Mohawk, just across the river from Blairsden, at an elevation of 4300 feet, and Johnsville, farther up in the mountains, at 5200 feet altitude. As the summer approached, the base of operations was shifted to the Sierra Valley, Sierra County, altitude 5000 feet, where stays were made at Loyalton and Campbell's Hot Springs (about a mile from Sierraville). These two places are at the edge of the open Sierra Valley, where sagebrush and pine forest meet, and not more than fifteen or twenty miles from the Nevada state line.

Nothing startling was expected from this trip, and the results were mostly only corroborative of what one would naturally anticipate finding in such localities as those visited. Yet there are a few items in my notebook that appear to be worthy of recording.

Chaetura vauxi. Vaux Swift. Noted at Campbell's Hot Springs, one and a half

miles from Sierraville. A pair had been noticed flying about on the edge of the coniferous forest for a couple of days, and on June 15 the male was taken for the record. While this swift must nest in many places in the state, actual breeding records seem to be rare, especially away from the coast. Grinnell, in his "Distributional List of the Birds of California" (Pacific Coast Avifauna, no. 11, 1915, p. 85) gives no breeding localities outside of the humid coast belt, and I have not come across any other published record for California since that work appeared.

Sayornis sayus. Say Phoebe. Not having met with this species elsewhere in the localities visited on this trip, I was rather surprised, on my arrival at Loyalton, Sierra County, to see outside my window a pair of Say Phoebes giving a brood of youngsters a good flying start on the voyage of life, the date being June 6. At the same time, this pair appeared to be putting the finishing touches on a new nest upon a beam in a low shed in the adjoining yard, though this may have been only the repairing of the old nest from which the brood was practicing its first flights. On June 9, a small boy mistook the adult female for an English Sparrow (*Passer domesticus*), upon which he was waging warfare, and killed it with an air gun. This bird was in badly worn plumage and contained an egg almost ready to be laid. Apparently there is no published breeding record of the species for this part of the Sierras.

Pica pica hudsonia. Black-billed Magpie. A pair of magpies, apparently of this species, was seen at the edge of the town of Loyalton on June 8, flying among some old mill buildings. As this magpie is a common resident of the territory only a few miles east, in country not separated from Sierra Valley by anything more than the open, gently graded Beckwith Pass, and with but little difference in altitude, there seems good reason for believing that a few individuals occasionally wander westward into this valley, and that more would be found if a greater territory were covered than was explored on this particular trip.

Passerculus sandwichensis nevadensis. Nevada Savannah Sparrow. Along the railroad from Hawley to Loyalton, through the meadowy part of the Sierra Valley, small sparrows were often seen from the car window, and in the outskirts of the town some specimens were taken that proved to be of the above form. These birds were evidently nesting in suitable spots all through the valley, as far as Sierraville anyway, but no nests were actually found. Considerable water flows into the comparatively level valley from the surrounding mountains, forming swampy meadows that are ideal places for their nesting grounds.

Melospiza melodia fisherella. Modoc Song Sparrow. This proved to be the form common to all the localities visited on this trip, from 4000 to 6000 feet elevation, but it was really numerous in only one spot, a swampy meadow about a mile up the stream that flows through Mohawk, where there was a thick growth of short, brushy willows, and plenty of long grass. In all other places where noted it was more scattered, and was seldom seen far from streams. Three nests were found. The first, on May 21, containing a set of three eggs about half incubated, was in a swampy spot near a low bank of the Feather River, and was situated in long dry grass among some dead limbs in the edge of a small willow clump, and placed about ten inches above the ground. The other two were in thinly scattered willow trees in the midst of the little settlement of Mohawk. One of these was found on June 4, with nestlings almost ready to leave their domicile, and was in a thin bunch of willow trees, under which, and only a few feet from the nest, the small boys of the village noisily played the greater part of the day. The nest was about three and one-half feet above the ground and built on some very open branches.

I had noticed the parents of this nest for some time, but never dreamed that the birds would build in such an open spot right in the boys' playground, where the embryo farmers had dammed up a little irrigating ditch that ran past the willow tree. My attention was called to the nest by the boys themselves, who had not found it until the old birds were feeding their young, when the movements of the parents attracted their notice. The third nest was also shown me by the same boys when I returned to Mohawk to gather up material left there to be picked up on my homeward journey. This was situated in a quieter place farther up this same little ditch, and was about seven feet above the ground in some leafless branches of a small willow. On this date, June 17, it contained four apparently fresh eggs, but was not disturbed, as I was all packed up and waiting for the stage when the boys showed it to me.

Passerella iliaca mariposae. Yosemite Fox Sparrow. This fox sparrow is commonly found throughout Plumas and Sierra counties anywhere in the buck-brush and manzanita association above 4500 feet elevation, but is seldom, or never, seen out in the open sagebrush, although it occurs to some extent where the sagebrush meets the coniferous forest and mingles with the buck-brush. That is to say, this sparrow is found there in summer, but what it does in winter is probably quite different. This is the form most of us supposed was *megarhyncha* until the error was pointed out and the race described by H. S. Swarth (Proc. Biol. Soc. Wash., vol. 31, 1918, p. 161).

The males are certainly good singers, and, at least in the breeding season, spend a large part of their spare time perched upon some elevated limb, or top of a sapling conifer, endeavoring to outsing each other and all the rest of their avian neighbors. They have a close second in the Green-tailed Towhee (*Oreospiza chlorura*), of the same habitat, and the two together assuredly cheer up the otherwise lonely wastes of brush around such spots as Mount Eureka.

Two nests of the Fox Sparrow were found at Johnsville, one on May 30 with four eggs in an advanced state of incubation, and one with three nearly fresh eggs on June 1, but these dates seemed a little early for general nesting. The first nest was situated about three feet from the ground in a spirea bush, between some mine buildings and beside a path which was used constantly by the mine people, who passed only four or five feet from the sitting bird. The second was in a rather open barranca on a steep hillside, and was on the ground at the bottom, at the base of a small piece of rock. Any slight rush of water, say from a heavy shower, would have washed it away. As a rule the brush was so thick and heavy in the localities inhabited by these sparrows that nests were very difficult to locate. Perhaps this was partly due to the early date of my stay where they were numerous, as others have told me of finding nests without much trouble.

Progne subis hesperia. Western Martin. After getting settled in the quarters selected and making things ready for business on the afternoon of my arrival in Loyalton, Sierra County, I took a stroll through the streets of the small town, to familiarize myself with the place and to fix landmarks. Upon approaching the bank building, about three blocks from the hotel, my ears were greeted by a sound that was familiar but seemed so very much out of place in a California town that it was quite startling. An upward glance, however, was reassuring, for there, circling overhead, and perching upon the cornice of the bank building, were unquestionably a family of Western Martins, apparently having the time of their lives. A couple of blocks away was a genuine, old-fashioned martin box on a pole in the street. A few martins were going in and out, while a few more were circling around and perching on the gable of a nearby dwelling house; but evidently the young ones mostly had left the parental quarters, and preferred the bank building for their resting place. This was my first experience with the semi-domestication of the Western Martin and was a great surprise at the time, but I have since been informed that Pasadena has a similar colony. This will answer a query in the March-April, 1918, number of THE CONDOR, as to whether there were any successful martin boxes in the west.

Oreoscoptes montanus. Sage Thrasher. This bird has been recorded as a summer visitant in the northeastern sagebrush region of the state of California, but has not heretofore been put on record as having been found in Sierra County. Near Loyalton, however, a number were seen, and several of different ages taken in the early part of June. One of these was a female that was evidently laying. Some juveniles were seen flying about at the same time, showing that the nesting season must be rather prolonged in this locality.

This completes the small list of birds noted on this trip that seemed especially worth calling attention to. In most places visited bird life was scarce, remarkably so considering the apparent attractiveness of some of these localities, but either something was wrong with the surroundings or there were not enough birds to go around, for scarce they certainly were.

The number of varieties seen in the different localities where observations were made was as follows: Mohawk, two weeks stay, 58; Johnsville, eleven days, 37; Loyalton, six days, 47; Campbell's Hot Springs, seven days, 53.

I had expected to find the Calaveras Warbler and the Sierra Hermit Thrush (*Hylocichla guttata sequoiensis*) fairly numerous near Mohawk or Johnsville, but found none of the former and identified but one of the latter, which was the only one whose note was recognized as belonging to that species, its song leading to its capture for identification purposes.

San Francisco, January 22, 1919.

THE MARITAL TIE IN BIRDS

By LOYE HOLMES MILLER

IN THE CONDOR for October, 1918, Mr. F. C. Willard contributes a most stimulating article dealing with the question "Do birds mate for life?" In support of his affirmative contention he brings forward some observations resulting from his extended field work in southern Arizona.

His article is good and the facts recorded are unimpeachable. The interpretation of facts, however, introduces the human element into science, and hence offers a basis for divergence of honest opinion. It is not my desire to dispute Mr. Willard's conclusions but to offer, wholly in good faith, some remarks in support of the opposite side of the question, so that each reader may be his own judge, jury, and court of appeal.

I am free to say that I do not know whether or not birds mate for life, which statement is equivalent to admitting that I do not consider my own argument as conclusive. In all probability it often falls out that the same individuals come together in successive reproductive cycles, but such may be quite a fortuitous occurrence, due wholly to propinquity and not therefore proof of the truth of a more general conclusion. For some time it has been my own opinion that birds do not, as a rule, retain the same mates from one season to the next. At the risk of stepping from the realm of knowledge to that of speculation, I am offering in support of my position the following points, scarcely to be dignified by the name of evidence.

My first contention is that a bird's activities are almost wholly the result of instincts. These instincts are racial characters and are transmitted from generation to generation, no less truly, though perhaps more variably, than is color, size, or wing area. Only occasionally can even the layman contend that what we call intelligence enters in as a factor of behavior. Instinct bids a Hooded Oriole choose palm or yucca fiber as her nesting material, even though she place the structure in a gum tree or on a corn stalk, and failure of this instinct is almost as rare as is that failure in pigment formation which results in albinism.

My second contention is that instincts are dependent for their stimulus upon the physiological condition of the animal. Recent experiments on internal secretions have been performed by the transplantation of reproductive glands or by the infusion of tissue extracts directly into the blood stream. These experiments have some bearing upon our problem in that they go to prove that plumage differences between the sexes of poultry are directly controlled by the presence in the body of these germ cells, and that many instinctive acts are dependent, for their immediate stimulus, upon the activity of these glands. A

young capon in whose body the ovaries of a hen are grafted, will develop the feathering characteristic of the hen. The capon without the engrafted ovaries, will develop almost as the normal male. A normal female rabbit, treated by hypodermic injection with the extract of foetus in normal salt solution, will pluck the fur from her breast and build a nest as though expecting a litter of her own young, though none are developing. In these two cases a structural and a psychologic character, respectively, are influenced by a physiologic agent —a particular chemical substance. This substance is secreted and thrown into the blood stream by the germ cell or by the developing ovum, and constitutes one of those products, so important to the highly organized animal, which we term internal secretions.

The germ cells in birds, like those in most other wild animals, are seasonally active. As a result the reproductive gland may increase or diminish in size from ten to one hundred fold in regular cycles, which cycles are generally conformable to season. With the fluctuation in mass there will be a change in the amount and possibly in the nature of the internal secretion, hence the whole physiologic balance of the body will be seasonally affected. It is doubtless because of this ebb and flood of the physiologic tide that certain instincts, particularly those connected with the reproductive process, appear and disappear in orderly sequence each year.

It is maintained that the choosing of a mate is a purely instinctive act on the part of the wild bird. (It might often be discovered to be so among our august selves!) The choice is part of a great chain of events connected with the reproductive process as a whole; it is physiologic in its immediate origin, and therefore is of seasonal recurrence. During the dormant period of its reproductive cells, the bird is practically an asexual creature. Maleness and femaleness have disappeared entirely so far as interests, many activities, and often external appearance, are concerned. On the other hand, resumption of the germ cell activity initiates a new mating activity. The bird chooses a new mate.

So much for the theorist. What have we from the field observer? Among the forces that hold individuals together in the bird world, we may recognize at least three bonds, the parental tie, the marital tie, and the social tie. Of these three, which is of most importance as a bond of some duration? I contend that the parental tie is of greatest survival value to the race. We find it lacking in but few species, notably in cowbirds, in Old-World cuckoos, and in megapodes. But in these species the marital tie is also lacking as a persistent bond. The flocking tie alone, persisting in the cowbirds, results in a reprehensible Bohemian freedom and a Gypsy-like vagrancy of most unavian character.

Upon the duration of the parental tie, the whole care of the young and hence the safety of the race is hinged. It must outlast the period of the young's dependency, while the marital tie is not absolutely necessary beyond the momentary contact required for impregnation. We actually see the parental tie ruptured. The parent weans her young because of waning instinct, and further support is denied it. The parent and her offspring then become rivals, peaceful or otherwise. If such a fundamental tie be ruptured, why not also the less necessary marital bond? We find at least circumstantial evidence bearing upon the question.

At the close of the breeding season, a thousand Linnets assemble in a weed patch, there to feed from time to time during the fall and winter. The flock

is an impartial mixture of sexes and of generations, in which the social tie dominates the other two, if these other two exist at all at the time. Are they really present? Will the flock coagulate in the spring and give out the same marital combinations that existed during the previous breeding season? Is not parent just as liable to mate with its own offspring as with a member of its own generation?

Consider the case of our non-social birds, such as the Shrikes and the Mockingbird. The asexual winter bird sees only a competitor in every other one of his own species who invades the particular territory which he has preëmpted as his own. These birds are, with us here in the south, more or less localized as to individuals; hence it doubtless often happens that, through propinquity, the same combination of individuals may recur in successive years. But does this involve a marital constance? I doubt it.

Take again in the case of the migratory species. There is a separate migration of the sexes in many of them. By the end of August most of the male Hooded Orioles have gone from the neighborhood of Los Angeles. There are still plenty of females and young of the year. The same might be said of the Black-headed Grosbeak and of a number of other species. The "men folk" have gone off on a regular stag party (or Elk's excursion) to the tropics. Will their "women folk" follow after with the children and hunt up their neglectful lords? May they not even winter in separate intra-tropical states, spend ing the asexual part of their yearly cycle wholly unconscious of each other's being? On the return migration, the same separate movement may be observed. The vagrancy impulse seems to attack the males first and they push northward in great pioneer armies of males. I have seen a flock of male grosbeaks flying like a flock of blackbirds and entirely unleavened by feminine presence. They were just arriving from the south. Did their last season's wives follow later and claim, each, her recalcitrant spouse?

Then there are cases of abject desertion on the part of the male. Such is true of the Anna Hummingbird. I have found many nests of this species, in various stages of progress of the nest or of its content, but never yet have I seen the marital tie survive the early stages of nest building. The female completes the nest, incubates the eggs, and rears the young without assistance from the male. Mrs. Hummingbird is the original golf widow, with a husband somewhere at the club, but she is not sure where (nor probably does she care).

Perhaps we should not offer here as evidence the great variety of courting antics in which birds indulge, from the classic flight of the retiring woodcock to the dancing tournaments of the grouse. Are they merely for stimulus and not for selection of the mate? If birds mated for life would we see these courting activities so commonly? They would be needed only by the young and by the bereaved.

The theorist, however, feels it proper to ask the question: Are there not biologic reasons why a seasonal readjustment of the marital relation would prove advantageous to the race? If a protracted effort is required each season before a mate is obtained, the less virile bird will go unmated. Would not the result average better for the maintainance of tone in the race? Whatever else may be claimed for the principle of sexual selection, it seems to be more or less vital to racial vigor. Seasonal recurrence of the selective process would then be classed as a sort of protective adaptation in a class of animals showing abundant specialization in other respects.

The writer has often met in the layman's mind, a tendency to read into the behavior of lower animals the impulses of the human brain. Further still, some would impose upon the lower animal the restrictions of the Mosaic Law. In case the human law have no foundation in biologic law, is there any reason why it should be imposed upon the lower animal? On the other hand, let us examine some of the laws of human ethics and see if they are merely different ways of stating laws of nature. I have already used in the preceding pages of this now too long article the words "reprehensible", "recalcitrant", and "vagrant", but is it proper to do so? I maintain that the ethics which demands that the marital tie shall last "till death do us part" should not be imposed in those words upon the bird but that the same law, recast in terms of biology, is applicable to, and is observed by, a multitude of bird species. Let that law read thus: "The male and female shall coöperate during the period of the young's dependency upon parental care." Will it not work out for humans in the majority of cases, almost as well as does the ritual?

Take two biologic humans, uninfluenced by the artificial conditions of our later civilization. They establish the marital tie at the age of twenty years. The first offspring is born within the year and becomes independent at the age of eighteen or twenty. In the meantime there have appeared, at intervals of two years, other offspring to the number of ten. Is this an exaggeration for the biologic human family? By the time the last young is independent, the parents have lived in active coöperation for the period of forty years, and have reached the age of sixty. They had best not attempt any readjustment at that age, even though they have no grandchildren on their hands. The ethical law is really a biologic law and we didn't know it.

Apply the same restriction to the bird and you have a coöperative period not extending, as a rule, beyond the spring and summer of each single year, and sometimes for even less time than that. There is no biologic demand for a greater prolongation of the marital tie. Certainly there is nothing in the birds' code of ethics. Why hold to a human lettering of the law?

State Normal School, Los Angeles, California, February 1, 1919.

THE SUMMER BIRDS OF HAZELTON, BRITISH COLUMBIA*

By P. A. TAVERNER

WITH ONE PHOTO

HAZELTON, BRITISH COLUMBIA, is at the head of the Skeena River, at the forks where the stream is formed by the junction of the Bulkley and Babine rivers. It is the most northern point reached by the Grand Trunk Pacific Railroad, hence, with the exception of points on the new Hudson Bay Railroad, it is the most northern station reached by any of the main railway systems in America. In latitude 55° 20′, it is on line with the mouth of James Bay and slightly north of Hamilton Inlet on the Labrador coast. Situated as it is, at the head of navigation on the Skeena River, the supply route

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of all the northern parts of British Columbia, and on the line of the old Yukon telegraph line, Hazelton formerly enjoyed somewhat greater commercial importance than it does now, as but one of many stations on a transcontinental railroad system. It still remains, however, an important distribution center for the country to the north. Though geographically far north and in a latitude that in the east would exhibit arctic characters, the region about Hazelton is purely Canadian zone in its zoological and botanical aspects, though close to the Hudsonian boundary. It is situated at the inner edge of the coast range,

Fig. 19. The Bulkley River, from the suspension bridge at New Hazelton, British Columbia.

the lower altitude at about 800 feet. The surroundings are mountainous. Roche de Brulé, the highest mountain in the vicinity, rising 9000 feet above the sea level, while lesser elevations above the valley are numerous. The valleys are clothed with a dense growth of poplar, cottonwood and hemlock, with numerous Douglas firs and occasional particularly fine examples of birch. The mountain sides are mostly covered with Douglas fir, balsam and spruce. The upper limit of timber comes at about 5000 feet elevation. The whole country has suffered severely from fire, and, as a result, much of it is almost impassable with tangled second growth and fallen timber, making progress except along

trails or roadways arduous and slow. Fortunately the roads are exceptionally fine, or at least were during our season there; pack trails lead everywhere, giving access to all parts adjoining. There is little farming activity and most of the few clearings are devoted to the grazing of a few cattle and bunches of pack horses. The topography is rough and broken. At New Hazelton, four miles above the original settlement at the forks, the Bulkley River breaks through a ridge by way of a narrow canyon over three hundred feet deep. Across this gorge the wagon road is carried on a suspension bridge, one of the highest structures of its kind in the world. A few hundred yards up stream and at a little lower elevation are the remains of a unique bridge that fell this summer, built years ago by the original natives from wire from the abandoned transcontinental telegraph line.

This locality was collected in by two parties from the Canadian Geological Survey during the summer of 1917. The first, composed of J. M. Macoun and Wm. Spreadborough, was in the field from June 20 to July 21. They camped near (Old) Hazelton, on the shores of the Skeena River, and worked most of the mountains and valleys adjoining. The present writer joined a geological party for a week (August 23 to 29) at a point some two miles west of New Hazelton near the bridge across the Bulkley. Most of his work was done in the vicinity of the camp, and higher altitudes were scarcely visited. Birds were very scarce and retiring during this midsummer week and the work is worth reporting upon only as supplementary to that performed by Macoun and Spreadborough earlier in the season.

1. **Gavia immer.** Common Loon. A Loon was seen on the Skeena, August 22, by the writer, as the train he was on approached Hazelton. The species was noted almost daily by Spreadborough in June and July.

2. **Mergus americanus.** American Merganser. Not common at Hazelton. Spreadborough reports an adult and four young.

3. **Charitonetta albeola.** Bufflehead. An adult with four young seen by Spreadborough on a small lake near Hazelton, July 18.

4. **Actitis macularia.** Spotted Sandpiper. Reported by Spreadborough as a common breeder along the river; not seen about New Hazelton.

5. **Bonasa umbellus.** Ruffed Grouse. Several coveys and single birds seen at various times by both Spreadborough and myself. No specimens were taken, but *umbelloides* is the form to be expected here.

6. **Accipiter velox.** Sharp-shinned Hawk. Three seen by Spreadborough, and single birds observed by the writer nearly every day.

7. **Buteo swainsoni.** Swainson Hawk. One doubtfully recorded by Spreadborough, July 18.

8. **Haliaeetus leucocephalus.** Bald Eagle. One taken June 29; several noted in July.

9. **Falco sparverius.** Sparrow Hawk. Spreadborough found the Sparrow Hawk fairly common about Hazelton, and the writer saw several birds near New Hazelton. Two females taken July 2 and 9. I refer these to the type form, *sparverius*.

11. **Otus asio.** Screech Owl. I thought I heard the distant quavers and trills of this species a couple of evenings, but too faintly to be absolutely certain of the identification.

12. **Bubo virginianus.** Great Horned Owl. One seen by Spreadborough July 20 or 21.

13. **Ceryle alcyon.** Belted Kingfisher. Several seen along the river at Hazelton and one seen by the writer on the Bulkley.

14. **Dryobates villosus.** Hairy Woodpecker. Reported as common by Spreadborough, and one taken by the writer August 26. Three specimens taken by Spreadborough. Two of these birds are of slightly questionable identity. They are quite smoky below, but whether this is due to contact with burnt timber or is a natural coloration is

a matter of some doubt. If the latter they must be regarded as showing a tendency toward *harrisi*. Otherwise all are plainly referable to *monticola*.

15. **Dryobates pubescens.** Downy Woodpecker. Spreadborough reports seeing what he took to be Gairdner Woodpecker (*Dryobates pubescens gairdneri*), July 18.

16. **Picoides arcticus.** Arctic Three-toed Woodpecker. Fairly common, and, similarly to the next species, found at the edges of burnt timber. Four specimens taken by Spreadborough, July 11.

17. **Picoides americanus.** American Three-toed Woodpecker. Spreadborough reports it as fairly common at Hazelton along the borders of burnt timber, where it appeared to be feeding on larvae of the spruce-tree borer. Three specimens taken July 5 and 6. Being without comparable eastern material I include them under *fasciatus* upon geographical probability, though I can see no sign of longitudinal striping on the back.

18. **Sphyrapicus ruber.** Red-breasted Sapsucker. Three birds seen by the writer, and two juveniles taken. Spreadborough reports them as common at Hazelton, he taking five specimens there. The adult males of this series are considerably brighter and with the back less spotted than our only California specimen, hence I refer all to *notkensis*.

19. **Phlœotomus pileatus.** Pileated Woodpecker. One seen by Spreadborough at Hazelton.

20. **Colaptes auratus.** Flicker. Fairly common. Four specimens taken by Spreadborough and two by the writer. The former are hybrids but nearer *auratus* than to *cafer*. The mixture of blood shows mostly in the intrusion of grayish in the throat, but the yellow of the shafts on some is deepened to dull orange. The two August birds from New Hazelton are by plumage pure *auratus*.

21. **Chordeiles virginianus.** Nighthawk. Several seen at Hazelton by Spreadborough. Again noted by the writer the evenings of August 25 and 26, but not thereafter.

22. **Cypseloides niger.** Black Swift. Nearly every bright afternoon a flock of Black Swifts was seen over our camp. Keeping in a loose company they drifted up and down the valley, coming and going until near evening. They usually kept high up, but occasionally one stooped low enough to be collected. Two were so obtained August 29.

23. **Chaetura vauxi.** Vaux Swift. Reported by Spreadborough as fairly common and breeding at Hazelton. Not recognized by the writer.

24. **Selasphorus rufus.** Rufous Hummingbird. Several seen by Spreadborough at Hazelton.

25. **Nuttallornis borealis.** Olive-sided Flycatcher. Three or four seen by Spreadborough at Hazelton, and one by the writer at New Hazelton. Two specimens taken, July 17 and in August.

26. **Myiochanes richardsoni.** Western Wood Pewee. Several heard by the writer August 24-27. Specimens taken June 28 and 30, July 16 and August 24.

27. **Empidonax hammondi.** Hammond Flycatcher. Spreadborough reports the Hammond Flycatcher as common. We have four adult specimens taken July 27 and 30, and two juveniles August 26 and 30. Both these latter are in the yellow-bellied phase and are so very similar to *flaviventris* as to be readily mistaken for that species. However, the throats are distinctly whitish, the green above grayish, and the bills and feet quite distinctive.

28. **Empidonax wrighti.** Wright Flycatcher. Though not mentioned in Spreadborough's notes he took specimens June 28 and July 10. Another was taken August 25.

29. **Cyanocitta stelleri.** Steller Jay. But one seen by the writer, a specimen taken August 25. Spreadborough does not mention it in his notes, but took two specimens June 28. The only constant character I can see in *annectens* is the presence of the gray spot over the eye. The other particulars usually given as diagnostic are unstable and unsatisfactory for individual identification. One of these specimens, a male taken June 28, has the spot, therefore I call it *annectens*. The other two are without it and I can only regard them as *stelleri*. These birds are slightly bluer on the back than the majority of specimens, but can be matched by individuals in either race. These two forms have broad fields of overlapping in their distribution, and in such localities their separation is purely arbitrary.

30. **Perisoreus canadensis.** Canada Jay. Six, seemingly a pair with young, noted by Spreadborough, July 18, and three collected. These birds are similar to those taken in Jasper Park on the east slope of the Rockies. They have extensive white fore-crowns, and blue-black hind crowns. *Fumifrons* is a slightly defined and unstable race, otherwise

they might be referred to that subspecies. As it is, I prefer to regard them provisionally as intergrades between *capitalis* and *canadensis*.

31. **Corvus corax.** Raven. A few seen by Spreadborough near Hazelton in July.

32. **Corvus brachyrhynchos** (sp?). Crow. Not common. Only a few seen by Spreadborough at Hazelton. None taken, so identity cannot be established. I assume that *C. caurinus* is a coast form and *C. b. hesperis* is a scarcely recognizable race.

33. **Euphagus cyanocephalus.** Brewer Blackbird. One pair with young noted by Spreadborough July 15. Two specimens taken.

34. **Loxia curvirostra.** American Crossbill. Several flocks observed by Spreadborough at Hazelton.

35. **Leucosticte tephrocotis.** Rosy Finch. Five seen by Spreadborough July 16 at an elevation of 6000 feet. Two taken are both *littoralis*.

36. **Spinus pinus.** Pine Siskin. Only one seen at a high altitude (5000 feet), by Spreadborough, July 16. Observed in flocks in August at New Hazelton in the lowlands several times. Specimens taken August 25.

37. **Zonotrichia leucophrys.** White-crowned Sparrow. Not common. Spreadborough reports but two seen. One specimen, taken July 15, is typical *gambeli*.

38. **Zonotrichia coronata.** Golden-crowned Sparrow. Not common. Only one seen, by Spreadborough.

39. **Spizella passerina.** Chipping Sparrow. Reported as common at Hazelton by Spreadborough, but not noted by the writer. One specimen, taken June 30, referred to *arizonae*.

40. **Junco hyemalis.** Slate-colored Junco. One specimen falls under this species, no. 10963, adult male (skull granulated), August 26. It is straight *hyemalis* except for a slight but obvious amount of red edgings on the back against which the gray of the hind neck cuts sharply. There is no rufus on the sides at all and I regard it as *hyemalis* with a slight infusion of *oregonus* blood.

41. **Junco oregonus.** Oregon Junco. The commonest species present during the August visit. Spreadborough reports it as a common breeder. Six specimens were taken in recognizable plumage, June 26 and July 5, 13, and 18, and two juveniles August 24 and 25. Besides these, numerous striped juveniles were secured, whose exact identity can only be conclusively established from accompanying parents. The June and July birds are typical *connectens*, while the August specimens in first winter plumage show a strong tendency towards *oregonus* in the richer redness of the back. The fact that the heads and throats of these birds are grayish instead of black, somewhat similar to *hyemalis*, I attribute to age rather than racial affinity. It thus seems that we have three forms of *Junco* at Hazelton, nearly pure *hyemalis*, *connectens* and *connectens* tending toward *oregonus*.

42. **Melospiza melodia.** Song Sparrow. Reported by Spreadborough to be not common, and only half a dozen specimens noted during his stay. In August a few were seen daily, but most were juveniles or in worn plumage. Seven specimens taken. These all appear to me to be *rufina*.

43. **Melospiza lincolni.** Lincoln Sparrow. Two seen at Hazelton by Spreadborough, June 26 and after. Three taken June 26 to July 17. Though I can perceive a slightly more olivaceous cast in fall birds from the west compared with eastern specimens, the difference in my opinion is too slight for subspecific recognition. I include them therefore under the typical form *lincolni*.

44. **Piranga ludoviciana.** Western Tanager. Common breeder at Hazelton according to Spreadborough, though the species was not observed by the writer in August. Four specimens taken June 27 to July 9.

45. **Iridoprocne bicolor.** Tree Swallow. Reported fairly common by Spreadborough at Hazelton, though not seen by the writer later. Specimen taken July 15.

46. **Tachycineta thalassina.** Violet-green Swallow. According to Spreadborough, a common breeder at Hazelton in June and July, though not seen by the writer in August at New Hazelton.

47. **Stelgidopteryx serripennis.** Rough-winged Swallow. Reported by Spreadborough to have been fairly common on the river in June and July, but not observed by the writer in August. One specimen taken July 4.

48. **Vireosylva olivacea.** Red-eyed Vireo. Several seen by Spreadborough at Hazelton in June and July. Not noted at New Hazelton in August.

49. **Vireosylva gilva.** Warbling Vireo. Fairly common at both Hazelton and New Hazelton. Nine specimens taken. I cannot see that these birds are any darker than eastern ones. If anything, they are slightly lighter and brighter in color. They certainly do not show any differences in measurements. The bills are slightly smaller and lighter, but in so illusive a degree as to make this feature of little value in separating them from *gilva.*

50. **Vermivora celata.** Orange-crowned Warbler. One Orange-crown taken August 28. It is too juvenile a bird to make subspecific pronouncement upon.

51. **Dendroica aestiva.** Yellow Warbler. Several seen by Spreadborough in June and July. But one noted in August. Three specimens taken, June 24 and 30, and August 28. These specimens seem to exhibit the racial characters of *rubiginosa* better than do most of our British Columbia birds, and therefore may be referred to that race.

52. **Dendroica coronata.** Myrtle Warbler. One specimen, a juvenile female, taken August 28, may be of this species. By tail spotting it might be either *coronata* or *auduboni,* and I cannot decide whether a faint tint on the throat is stain or a suggestion of the yellow throat patch.

53. **Dendroica auduboni.** Audubon Warbler. Common in June and July, and two seen in August. Five specimens taken, June 24 to July 18, and August 28.

54. **Dendroica magnolia.** Magnolia Warbler. Not uncommon. Spreadborough reports seeing five pairs that, from their actions, were probably breeding. Two were taken in August. Five specimens in all were taken.

55. **Dendroica striata.** Black-poll Warbler. One juvenile female taken August 25.

56. **Dendroica townsendi.** Townsend Warbler. Two seen August 25.

57. **Seiurus noveboracensis.** Northern Water-Thrush. On June 28 Spreadborough took two, and thereafter noted a number, always in low wet woods. These specimens exhibit the rather faint characters of *notabilis* in their highest degree.

58. **Oporornis tolmiei.** Macgillivray Warbler. Common in low bushes on burnt ground in June and July, and seen again August 20 and 24. Four specimens taken.

59. **Geothlypis trichas.** Maryland Yellowthroat. One seen and collected August 25. This is a juvenile bird that cannot be confidently referred to a subspecies.

60. **Wilsonia pusilla.** Wilson Warbler. One seen August 25. As it is only a sight record no subspecific designation can be given. *Pileolata* is the geographic probability.

61. **Setophaga ruticilla.** Redstart. Common. Six specimens taken, June 24 to July 10, and August 26 to 29.

62. **Certhia familiaris.** Brown Creeper. Two collected by Spreadborough, July 7 and 17. As these are juveniles they are referred to *zelotes* by geographic probability.

63. **Sitta canadensis.** Red-breasted Nuthatch. Several seen by both Spreadborough and the writer. Specimen taken June 24.

64. **Penthestes atricapillus.** Black-capped Chickadee. One of the commonest birds. Five specimens taken, June 15 to 25, and August 26 to 28. All are *septentrionalis.*

65. **Regulus calendula.** Ruby-crowned Kinglet. A small flock seen August 25. The brush was very dense and birds shot could not be found, hence no specimens.

66. **Hylocichla ustulata.** Olive-backed Thrush. Reported by Spreadborough as common and breeding. In August thrushes were so shy and retiring that their specific identity was difficult to determine unless the birds were collected. Two specimens taken July 6, and three August 25 and 26. Though these birds are very slightly more olive than eastern specimens, I do not care to separate them from *swainsoni.*

66. **Hylocichla guttata.** Hermit Thrush. Thrushes were often heard and glimpsed in August, but seldom seen plainly enough for identification. Three specimens were taken August 26. All are juveniles, and but one sufficiently advanced to base subspecific identity upon. I cannot separate it from *pallasi.*

67. **Planesticus migratorius.** American Robin. Abundant in June and July, and a few seen daily in August. Four specimens taken. I do not see in them sufficient grounds for separation from eastern *migratorius.*

68. **Ixoreus naevius.** Varied Thrush. One seen by Spreadborough July 20.

69. **Sialia currucoides.** Mountain Bluebird. Reported by Spreadborough as being common in burnt timber in July. It was not seen by the writer personally in Aug-

ust, though reports were received, leaving little doubt as to its presence in the vicinity. Five specimens taken, July 5 and 6.

Geological Survey, Ottawa, Canada, April 5, 1918.

FROM FIELD AND STUDY

An Early or Late Nesting of Green-backed Goldfinch?—On November 4, 1918, a neighbor called me over to inspect the nest of a Green-backed Goldfinch (*Astragalinus psaltria hesperophilus*) that he had found in his yard. The nest was in an apricot tree about eight feet up, and from which all the leaves had fallen. It contained two partially feathered young. The fact that autumn had bared the trees of their foliage made it look especially odd.—N. K. Carpenter, *Escondido, California, November 14, 1918.*

Grackles Nesting in Herons' Nests.—On June 8, 1918, at Little Fish Lake, Moose Mountain District, Saskatchewan, on a wooded island, I found a colony of Great Blue Herons breeding. Under and in the sides of their large nests, which were about 25 feet from the ground, five or six pairs of the Bronzed Grackle (*Quiscalus quiscula aeneus*) had built their nests, these latter containing young.—H. H. Mitchell, *Provincial Museum, Regina, Saskatchewan, October 25, 1918.*

Notes on the Black-bellied Plover and the Golden Plover.—It seems to me highly probable that the Golden Plover (*Charadrius dominicus dominicus*) may be more numerous along the Pacific Coast than is generally supposed, and possibly the same may be said of the Atlantic Coast also. Without wishing to cast any slurs upon ornithologists in general, it is nevertheless a fact that even the experienced bird man must be strictly on the alert in order to detect a Golden among a flock of Black-bellies (*Squatarola squatarola*). The average hunter undoubtedly consigns them all to the pot as the same thing, when, if he were only told the difference, he would be likely to hand the rare one over to a bird student.

The somewhat smaller size of the Golden Plover, with its three front toes and no hind toe, instead of the three front toes plus a well defined hind toe in the Black-belly, are evident enough when the bird is in hand. However, these recognition marks are obviously useless when the birds are flying or running along the beach. I know of but one wholly satisfactory clew to the birds in life, which is the tail and the upper tail-coverts. The Black-bellied Plover shows an exceedingly prominent amount of white on these parts, while the Golden Plover shows none at all, with the exception of a few bars on the tail.

Another means of field identification are the jet black axillars, in all plumages, of the Black-belly in contrast with the pale feathers of the Golden. These can be seen, however, only when the birds have their wings raised and are broadside to the observer; but any bird that shows black on the under side of its wings is not a Golden Plover.

For the benefit of those who do not know, it may be of interest to say that both of these birds are without much doubt to be found along the Pacific Coast, to at least as far north as the state of Washingon, at any time between August 15 and May 15. The Black-bellied Plover is a winter resident, beyond question, and the same would probably hold good with the Golden Plover (see Condor, xviii, 1916, 31). Records of the Golden Plover along the Pacific Coast are so few that the estimate given above as to their probable time of occurrence must be taken as purely theoretical. However, my twenty-five years acquaintance with our North American shorebirds makes me fairly certain that the estimate is not greatly at variance with the actual facts, if these could be ascertained.

We have all undoubtedly posted our sportsmen friends to be on the lookout for a "Widgeon with a red head", which he must turn over to us without a feather missing. Having thus put a lookout for a male European Widgeon, let us also impress upon these same long-suffering friends the necessity of saving for us any Black-bellied Plover, also called "Beetle-head", that shows no white on its lower back and no black under the wing. It may not benefit you often, but it does sometimes.—J. Hooper Bowles, *Tacoma, Washington, October 15, 1918.*

Notes on the Behavior of Pintail Ducks in a Hailstorm.—On October 20, 1918, I was hunting ducks on the Rio Grande south of Las Lunas, New Mexico. I was sitting in my blind on a sandbar, with some dead ducks set out as decoys, when a very severe hailstorm set in. During the thick of the storm I discovered that a flock of about forty Pintail Ducks (*Dafila acuta*) had settled among my decoys not twenty yards distant. Each bird was facing toward the storm, and each had his head and bill pointed almost vertically into the air. The flock presented a very strange appearance, and I was puzzled for a moment as to the meaning of the unusual posture. Then it dawned on me what they were doing. In a normal position the hailstones would have hurt their sensitive bills, but pointed up vertically the bill presented a negligible surface from which hailstones would naturally be deflected. The correctness of this explanation was later proven by the fact that a normal position was resumed as soon as the hail changed into a slow rain.

Has any other observer ever noted a similar performance in this or other species of ducks, or in any other birds?—Aldo Leopold, *Albuquerque, New Mexico, October 22, 1918.*

Unusual Occurrences of Bendire Thrasher, Forked-tailed Petrel and Western Goshawk.—In his *Distributional List of the Birds of California,* under Bendire Thrasher (*Toxostoma bendirei*) Dr. Grinnell says "no verification" of the Palm Springs record is now to be obtained. The specimen upon which this record was based is now no. 1507 in the collection of the San Diego Natural History Museum. It was taken April 8, 1885.

On December 23, 1918, as I was walking along the beach at Ocean Beach, California, looking among the drift marking the high tide line for dead fulmars, which occasionally wash ashore there, I found a Forked-tailed Petrel (*Oceanodroma furcata*). The place was within the city limits of San Diego. I believe this is the southernmost record for this species up to this time. The skin is no. 2031 of the Natural History Museum. As this was the first specimen of this species that I had handled I looked it up rather carefully. In reading Ridgway's description in his *Manual of North American Birds* I find that he divides the family into two subfamilies, *Procellariinae* with 13 secondaries, in which he places the genus *Oceanodroma*; and *Oceanitinae* with 10 secondaries. My *furcata* has but ten secondaries in each wing. The bird was in poor condition, but the flight feathers seem to be all there. Our *O. melania* and *O. socorroensis* appear to have 13 secondaries. Someone having the opportunity to examine fresh specimens of *furcata* should count the secondaries.

A Western Goshawk (*Astur atricapillus striatulus*) was shot by Rudolph Wueste at the Lower Otay Reservoir (about five miles north of the Lower California line) on November 9, 1916. It is now in the collection of the Natural History Museum of San Diego.—Frank Stephens, *Natural History Museum, San Diego, California, January 13, 1919.*

The Sandhill Crane in Northeastern California.—On September 30, 1906, when studying the animals and plants in American Valley, not far from the town of Quincy, I was suddenly startled by the unmistakable rasping cry of a Sandhill Crane. It was loud and clear and came from the willow-bordered meadows near where I was standing, but the bird kept hidden by the tall bushes so that I was unable to actually see it. However, since there is no other bird whose note could possibly be mistaken for that of the Sandhill Crane, there can be no question as to the record. And as the date was too early for the arrival of migrants from the north, there is little room for doubt that the bird had bred on these meadows.

The absence of recent records in the splendid work on *The Game Birds of California,* by Grinnell, Bryant, and Storer, the latest being Henshaw's for 1878 and Townsend's for 1887, impels me to record the above note.

And while on the subject of Sandhill Cranes in California, it may be worth while to mention that on November 12, 1904, while witnessing an elk drive at Buttonwillow Ranch, at the southern end of San Joaquin Valley, I saw half a dozen Sandhill Cranes flying over. The people at the ranch told me that the Cranes would be common a little later, and that in the winter they were very destructive to sprouting grain.—C. Hart Merriam, *Washington, D. C., January 29, 1919.*

Notes from Colton, California.—A set of eggs of the Ash-throated Flycatcher (*Myiarchus cinerascens cinerascens*) was collected near here in May, 1918. The nest was in a cavity in a dead stump and was twenty-two inches below the opening. While I was removing the nest material I was surprised to feel more eggs under the flycatcher's nest. These were eggs of the Red-shafted Flicker and all but one had holes in them. Possibly the flycatchers had driven the flickers out of the cavity, pecked holes in the fresh flicker eggs, and had then gone on with their nest building over the ruin.

May 7, 1918, I collected near here a nest of the Tree Swallow (*Iridoprocne bicolor*) containing three eggs of the swallow and one egg of the Western House Wren (*Troglodytes aedon parkmani*). The wren egg could not have been placed in the nest by a boy, as a section of the tree had to be removed before the nest could be examined. I observed the swallows taking feathers to the nest at least ten days before I collected the set. I did not see any wren near by.

A set of four eggs of the California Yellow Warbler (*Dendroica aestiva brewsteri*) was taken by me near San Bernardino on May 5, 1918. Elevation above sea level was about 1000 feet. I consider this a very early record for this species.—W. C. Hanna, *Colton, California, January 2, 1919.*

The Red-billed Tropic-bird in California.—A. W. Anthony, in 1889 (Proc. Calif. Acad. Sci., 2d ser., II, p. 86), predicted that *Phaethon aethereus* would be found to be "a rare visitant to the entire Pacific coast of the [Lower California] Peninsula," and Grinnell (Pac. Coast Avif., no. 11, 1915, p. 176), although relegating to the hypothetical list Bryant's record (Proc. Calif. Acad. Sci., loc. cit., footnote) for Marin County, California, based on a skull, expresses the belief that "the species . . . is likely to be observed sooner or later north of the Mexican boundary."

A specimen which proves to belong to this species was taken in the San Pedro Channel about midway between Long Beach, California, and Catalina Island, in August, 1916, by Captain W. H. Graves, who operates a small pleasure boat out of Long Beach.

When interviewed by the writer in September, 1916, Captain Graves stated that this bird or one like it had been observed on the last previous voyage—a day or two before the capture—and had sailed about over the boat; that, on the day of capture, the bird was again "picked up" near where it had been observed before, and was shot as it sailed overhead; and that he did not remember ever having seen another in the several years he had operated in the channel.

The bird had already been mounted by G. W. Stowe, a taxidermist of Long Beach, who had no further data, and it was later placed on exhibit in a glass case directly in front of a south window at the Long Beach Chamber of Commerce, by an anonymous friend to whom Captain Graves had presented it. Persistent effort to procure the specimen for scientific preservation failed.

Descriptive notes taken by the writer directly from the specimen in September, 1916, were substantially as follows. The plumage was mainly white, which predominated on the back in the proportion of two or three to one. The occiput was mottled with black, which there predominated. A narrow black band curving up from the gape extended through the eye and backward. Black barring extended from the occiput all over the back. The scapulars were black with white edges, as were also the coverts except on the shoulder. The primaries were black, with the inner webs of some, at least, white edged. The exposed secondaries were white. The rectrices were white with quills black, except in the extended shafts—eight or nine inches longer than the others—in which the quills were white. The under tail coverts were mottled with black. There was a creamy sheen to the uninterrupted white areas, without suggestion of pink. The taxidermist had painted the bill an orange red with yellowish tip, the tarsi an olive yellow, and the feet blackish, and had used eyes with *orange* irises.

The specimen thus apparently is in normal adult plumage, and is quite like a large series of the Red-billed Tropic-bird in the California Academy of Sciences collection from the Galapagos Islands. A single specimen of the Yellow-billed Tropic-bird in the same collection was also examined.—J. Eugene Law, *Los Angeles, California, February 10, 1919.*

EDITORIAL NOTES AND NEWS

We are not infrequently asked why THE CONDOR is not printed on a highly surfaced quality of paper such as will give a greater brilliancy of contrast and more detail in the photographic illustrations. There are two reasons why we adopted the present dull-finish, uncoated paper. Durability was the first consideration. The distant future should be considered in that our magazine is a repository of recorded facts which we want to be available in libraries 200, 500, years hence; and the lasting qualities of surfaced paper are very much in doubt. Just dampen a copy of THE CONDOR, indeed soak it over night, and do the same with a glossy-papered periodical, then dry them both, and compare results! Furthermore, and an immediate concern, as it happens, of those of us who have to do a great deal of close reading, the eyestrain is very much more trying on the reader in the case of glossy paper than with a dull surfaced stock. The Editor admits that he now rarely undertakes to read any publication in which surfaced paper is used—simply because of the personal, physical factor of eyestrain. On the whole, and lacking the resources for running separate "plates", we decided in favor of the present paper. Even so, did not our printer get admirable results with the halftones in the January CONDOR? Is there not something appealing as well as restful about those gray-toned Solitaire pictures?

From the very beginning of our interest in the names of birds we have been accustomed to use the generic name *Falco*, and this name has come to attach itself conveniently and with apparent scientific exactness to our ideas of the relationships of the raptorial birds. Now comes a school of genus splitters which is attempting to get the ornithological public to accept generic refinements which provide us with the name *Hierofalco mexicanus* for the Prairie Falcon, *Rhynchodon peregrinus* for the Duck Hawk, *Tinnunculus columbarius* for the Pigeon Hawk, and *Cerchneis sparveria* for the Sparrow Hawk. This is merely one instance in illustration of the tendency of the times in certain taxonomic circles. We have thought about the matter a great deal, and we have read the current literature relevant to these specific cases. We hereby *challenge* somebody or anybody to advance adequate grounds, either profoundly scientific or utilitarian, in justification of such ultra generic splitting! It is apparently the line of least resistance, when group relationships are in question, to subdivide, rather than unite; and hence the tendency. What we need is the higher plane of ornithological scholarship which will go at the expression of *likenesses* as well as differences between groups of species with a view to most exactly representing genetic relationships. Meanwhile, it seems to us that the general use of these questionable generic names had better be avoided, in the interests of uniformity and of clarity of understanding.

Many accounts of the damage done to rice by ducks have recently appeared in the newspapers, but gross exaggeration is manifest in the majority of these. Furthermore, the attitude taken by many sportsmen in their attempts to vindicate the birds has done more harm than good. The real facts in the case are now before the United States Department of Agriculture, as a result of the investigation by Mr. Alexander Wetmore, he having spent two months the past autumn in the four counties of California which lie in the Sacramento Valley, where large quantities of rice are grown. Dr. H. C. Bryant, Game Expert for the California Fish and Game Commission, has also been on the ground. The reports of these two men have shown that ducks do destroy rice after it has matured and also after it has been cut and is in the shock. The duck responsible for the damage is the Pintail. Although the ducks will not drop down into a thick stand of rice, they will seek out thin rice or places where there is open water. From such places they work out into the good rice, stripping the grains from the head and doing serious damage. Bombs have proved to be an economical means of driving ducks from rice fields. A few bombs properly handled will drive the birds from a large area and the birds are so frightened that they rarely return to the same place the following night. The rice grower who studies the situation and decides that he will outwit the birds need not suffer from depredations. The grower who says much and does little is the one who loses most. The United States Department of Agriculture has taken proper steps to give the rancher a fair chance to protect his crops.

MILITARY SERVICE RECORD

This list contains all the names which have come to the attention of THE CONDOR staff. The dates in parentheses indicate when the last word was received; in most cases this came direct from the one named or from a near relative. A few names with data have been taken from the last *Auk*, in which cases it is so noted. So far, no word has come of any casualty to a Cooper Club member.

ANDERSON, Ernest M., Private, Co. A, Royal Canadian Regiment, B. C. Special Ser-

vice Unit, Quebec, Can. (*Auk*, Jan., 1919.)

Barrows, Dr. Albert L., First Lieutenant, 347th Machine Gun Battalion, 91st Division, A. E. F., Belgium. (Feb., 1919.)

Bergtold, Dr. W. H., Major, Medical Corps, U. S. General Hospital no. 21, Denver, Colo. (*Auk*, Jan., 1919.)

Brooks, Allan, Major, 11th Canadian Infantry Headquarters, British E. F., France. (Dec., 1918.) In the service the entire period of the war, in sniping organizations. (Jan., 1919.)

Burleigh, Thos. D., Private 3d Detachment, 10th Engineers, Forestry Division, A. E. F., France. (Dec., 1918.)

Calder, James A., Master Gunner Class, Enlisted Specialists' Preparatory School, 60th Co., Coast Artillery Corps, Ft. Winfield Scott, Calif. (Dec., 1918.)

Camp, Charles L., First Lieutenant, Headquarters, 7th Field Artillery, A. E. F., France. (Dec., 1918.)

Chapman, Dr. Frank M., Red Cross Commissioner, South America. (*Auk*, Jan., 1919.)

Crosby, Maunsell S., Captain, Quartermaster Corps, Finance Officer, Camp Mills, N. Y. (Dec., 1918.)

Dice, Dr. Lee R., Private, Medical Department, Yale Army Laboratory School, New Haven, Conn. (Dec., 1918.)

Drowne, Dr. F. P. (Dec., 1918.)

Eastman, F. B., Major, Infantry, Camp Grant, Ill. President of Discharge Board, and Camp Morale Officer. (Dec., 1918.)

Fowler, Frederick H., Captain, Engineers, Office of Chief of Engineers, Washington, D. C. (*Auk*, Jan., 1919.)

Gibbons, Dr. Morton R., Major, Medical Corps, Commanding Officer, Hospital, Camp Pike, Ark. (Feb., 1919.)

Goldman, E. A., Major, Sanitary Corps, A. E. F., France. In charge of rat depredation control about supply depots. (Dec., 1918.)

Gosse, P. H., Captain, 22d Army, British E. F., France. Later transferred to service in India. (Sept., 1918.)

Hartman, P. J., Engineers, A. E. F., France.

Holden, F. Harvey, Captain, Battery F, 62d Regiment, Coast Artillery Corps, A. E. F., France. (Dec., 1918.)

Hunt, Edwin B., Aviation, Naval Reserve. (Feb., 1919.)

Kellogg, Remington, Sergeant, Camp Hospital 29, Base Sec. 2, A. E. F., France. (Nov., 1918.)

Kellogg, Vernon L., Food Administration work with Mr. Hoover in Europe, and Relief Commission work in Belgium. (Dec., 1918.)

Kirn, Alfred J., Base Hospital 55, A. E. F., France. (Dec., 1918.)

Kittredge, Jos., Jr., Captain, Engineers, Forestry Section, A. E. F., France. Firewood production for the advance section. (Dec., 1918.)

Kofoid, Charles A., Major, Sanitary Corps, Laboratory, Port of Embarkation, New York City. (Jan., 1919.) Now lecturing before army medical organizations. Earlier conducted hook worm survey of the Southern Department.

Lincoln, F. C., Corporal, 8th Service Co., Signal Corps, Presidio, San Francisco. (Jan., 1919.) In charge of Headquarters Loft (Carrier Pigeon), no. 7.

Loftfield, Gorm. (Dec., 1918.)

Loring, J. Alden, First Lieutenant, Ordnance Department, in Texas. (*Auk*, Jan., 1919.)

Magee, William A., Jr., Ensign, Instructor, Naval Aviation School, Pensacola, Fla. (Jan., 1919.)

Meyer, Miss Heloise, Red Cross, in France. (*Auk*, Jan., 1919.)

Mitchell, Dr. Walton I., Major, Medical Corps, 805th Pioneer Infantry, A. E. F., France. (Dec., 1918.)

Moffitt, James, Seaman, U. S. Naval Reserve, San Francisco, Calif. (Jan., 1919.)

Mueller, Carl S., Second Lieutenant, Quartermaster Corps, Finance Division, Camp Merritt, N. J. (Dec., 1918.)

Murie, Olaus J., Cadet, Army Balloon School, Ft. Omaha, Neb. (*Auk*, Jan., 1919.)

Palmer, R. H., Reserve Officers' Training Corps no. 9, Presidio, Calif. ("Nov. 1917" —*Auk*, Jan., 1919.)

Peyton, Sidney B., Corporal, Machine Gun Co., 160th Infantry, 40th Division, A. E. F., France. (Dec., 1918.)

Phillips, Dr. John C., Medical Corps, Ft. Benjamin Harrison, Ind. ("Dec. 1917"—*Auk*, Jan., 1919.)

Redington, Robert R., Engineering Department, Dupont's, Wilmington, Del. (Dec., 1918.)

Richey, Howard J., Corporal, Ambulance Service Training Camp, Camp Crane, Pa. Enlisted in June, 1917. (Dec., 1918.)

Robertson, John McB., Master Gunner Class, 60th Co., Coast Artillery Corps, Enlisted Specialists' Preparatory School, Ft. Winfield Scott, Calif. (Dec., 1918.)

Schaefer, Oscar F., Sergeant, 3d Detachment, 10th Engineers (Forest), A. E. F., France. (Dec., 1918.) Enlisted in June, 1917.)

Schussler, George W., Staff Sergeant, Of-

fice of the American Representative, Franco-American War Affairs Commission, Elysée Palace, Paris, France. (Dec., 1918.)

Shelton, Alfred C., Second Lieutenant, Sanitary Corps, Camp Crane, Pa. (Jan., 1919.) Discharged.

Silliman, Edmund, Naval Reserve. (Feb., 1919.)

Smith, Allyn G., Second Lieutenant, Air Service, Instructor, Radio Officers' Training School, Columbia University, New York City. (Dec., 1918.)

Stivers, Dr. C. G., Captain, Medical Corps, Air Service, San Francisco. (Dec., 1918.)

Stoddard, H. L., Sergeant, Co. B, 311th Ammunition Train, A. E. F., France. (Dec., 1918.)

Storer, Tracy I., First Lieutenant, Sanitary Corps, Laboratory Car 'Metchnikoff,' Ft. Sam Houston, Texas. (Jan., 1919.) Discharged.

Sweeney, J. A., Private, Co. E, 2d Battalion, 20th Engineers (Forest), A. E. F., France. (*Auk*, Jan., 1919.)

Tyler, Dr. Winsor M., Captain, Medical Corps, Ft. Adams, R. I. (*Auk*, Jan., 1919.)

Ufford, Elmer D., A. E. F. (Feb., 1919.)

Van Rossem, Adriaan, First Lieutenant, Machine Gun School, Camp Hancock, Ga. (Dec., 1918.)

Walker, Alex., Battery A., 45th Regiment, Coast Artillery Corps, A. E. F., France. Dec., 1918.)

Wood, Casey A., Lieutenant Colonel, Medical Corps, Staff of Surgeon General, Washington, D. C. (Dec., 1918.) Entered service, June, 1917. Earlier, in charge of Examining Unit, Chicago, Ill., and then Chief of Head Survey, Camp Sherman, Ohio. Recently, Acting-Director of Board on Medical and Surgical History of the War. (Dec., 1918.)

Wright, Howard, Navy.

Young, John P., Major, Camp Dix, N. J.

COMMUNICATION

TRINOMIALS AND CURRENT PRACTICE

Editor The Condor:

It seems to me that various points brought up by Swarth in his review (Condor, xx, 1918, pp. 141-142) of Taverner's papers in the "Summary Report of the Geological Survey, Department of Mines, for the Calendar Year 1916" (Ottawa, Canada), and Mr. Taverner's reply to the same (*ibid.*, pp. 213-216), are worthy of further discussion. There have been several innovations in ornithological practice during the past year, and at least the main points of these merit careful consideration by American ornithologists.

For bird papers of a strictly "popular" style, the method of procedure adopted by Mr. Taverner in his articles could be used with gratifying results. This class of literature is increasing in quantity and popularity, and for such, the purely trinomial nomenclature is admittedly cumbersome and confusing to many readers. How much better would it be for authors uniformly to use the binomial for the Latin, and the specific name for its English equivalent, instead of the name of the eastern race as is commonly employed in such case. For entirely scientific, and what I may term popular-scientific work, however, the old system seems better, although it is far from ideal.

Mr. Taverner says that the plan which he has followed "discourages the unconsidered copying of names and encourages original research". In future years, however, when gathering published information for a report on some general region, another author cannot personally verify all binomial records and identify all the specimens referred to. In fact, if this binomial system were in general use, it would be almost impossible for anyone to prepare an authoritative report on a region, because of this difficulty of using previously published information. Even though Mr. Taverner does make trinomial notations at other points in his papers, that does not alter the general complexion of the matter, for an article which is both binomial and trinomial in nomenclature has the faults of both systems and the advantages of neither.

I think that the majority will agree with Swarth that "the value of such a list lies largely in the exact subspecific determination of the various forms at the points at which the specimens are taken"—*all* of the forms, and not just those which the author deems worthy of special notation. Unless some contributions to the habits and life histories of birds are given also, that is its *only* value, as I see it. Although in the vast majority of lists, specimens of all subspecies mentioned have not been secured, one who is familiar with his locality can be reasonably certain of identities, usually, and if he is not, he should, and often does, indicate his uncertainty. To an expert in geographical distribution, the binomial name possibly conveys all that is necessary, but the average reader and bird student wants to know the *probable* form encountered, and will almost never bother to search out its logical identity.

I heartily agree that too many articles are "thrown together" without the proper

determination of material, but this is the fault of individuals and not of the system. Also it is true that subspecific designation is only a part of ornithology, and not its end, but it is a very important part, and although current usages are far from perfect, we should be very careful not even partially to adopt others that would prove less so.

While I am writing this, I wish strongly to protest, though probably in vain, against the indoor sport taken up by many quasi-ornithologists of condemning, without any consideration whatever, every new subspecies which is described. If, after careful comparison of typical material, one who is reasonably familiar with his bird decides that the form in question is untenable, I have nothing to say, for I "live in a glass house" and there are many forms which I think unwarranted. However, the style now seems to be for many who know little about birds, to throw up their hands in horror at every new thing described, without ever having seen a skin of that form. Even if material has been examined and no differences noted, the amateur or semi-amateur must remember that, in the first place, his skins may be intergrades, and in the second, that he may be unable to recognize differences which to a trained specialist may be perfectly apparent. And so, even if there appear to be entirely adequate grounds for objections, one should be careful to keep from joining in any of Osgood's classical "dribbling protests."—A. B. Howell, *Covina, California, December 26, 1918.*

PUBLICATIONS REVIEWED

The Game Birds of California | Contribution from the University of California | Museum of Vertebrate Zoology | By | Joseph Grinnell | Harold Child Bryant | and | Tracy Irwin Storer | University of California Press | Berkeley | 1918. Large 8vo, pp. x+642, 16 colored pls., 94 figs. in text, 1 table inserted; issued December 28, 1918. Cloth, $6.00, net.

The need of a work such as this has been too real to require further comment after the deficiency has been so adequately met. The Game Birds of California will win immediate approval. From the dark blue, gold-lettered cover and excellent colored plates to the dull surfaced paper and beautiful typography it is consistently an admirable book. And if this praise of externals seems unduly to extoll a less important feature, let the reviewer confess himself a lover of attractive books and remind the reader that in good society, science well-dressed is not without appreciation, and even praise.

To one who knows all three authors, they seem a very happy combination of craftsmen. Certainly the finished product has justified Doctor Grinnell's prefatory statement—"namely that the highest plane of scientific output can be accomplished only through coöperative effort. . . . Where one author working alone would make mistakes unawares, two, or better, three, are able to check one another's output to advantage. The best results, always granting mutually sympathetic interest, will follow organized coöperative toil."

We learn from the introduction that "In preparing the present volume the authors have attempted to meet the requirements of a varied public. The hunter wishes information concerning the haunts and the habits of our game birds; the naturalist wishes to have the completest possible data regarding their life histories; the legislator who appreciates the necessity of judicious game laws wishes to have the facts that are relevant to his purpose presented in concise form; and the conservationist desires that information which will assist him in his efforts to perpetuate our bird life for the ultimate benefit of the greatest number of people. Whether the needs of these various classes have been adequately met in the following pages remains to be proved, but it may at least be stated here that none of them has been overlooked. To each of the four categories of persons above mentioned, this book is offered as a working manual." It seems to the reviewer that the authors have lived up to the task which they set for themselves.

One of the underlying incentives for the publication of The Game Birds of California was found in the decrease of many species of game birds and the seeming indifference of the public toward instituting rational measures to conserve them. The book adequately treats of the means to be taken to conserve game and makes practical recommendations suited to each species.

Introductory chapters are devoted to general subjects, as follows: Decrease of Game and its Causes; Natural Enemies of Game Birds; The Gun Club in California; History of Attempts to Introduce Non-native Game Birds; The Propagation of Game Birds; Legislation Relating to Game Birds in California. The sportsman and nature lover will find much of immediate utility in these general chapters.

The technical matter useful to the special student of birds is found condensed in small type at the head of each discussion. This makes reference to the finer characters of each species easy, and at the same time segregates this formal matter from the more readable text following.

The plan of treatment of each bird follows a regular sequence: Technical portion (in small type): Accepted common and scientific names; other names; description: adult male, adult female, juvenile, downy young; marks for field identification; voice; nest; eggs; general distribution; distribution in California. Text (in large type): General and local distribution; migration; field marks; life history; nest, eggs, young; habits and behavior; food; economic value; present and probable future status.

Every one of the 108 native game birds of the state is described in detail, these including the ducks, geese, swans, ibises, cranes, rails, snipe, sandpipers, curlew, plover, quail, grouse, pigeons and doves. The localities in which each is found, and the times of the year when it is found, are designated and its life history and habits are accurately and well described.

Some of the life histories are unusually full—notably those of the commoner and more popularly known species; and while justice is done to the observations of previous workers, much new material of sterling worth is woven into the entire fabric of the book. Thus it is a substantial contribution to science—to the body of ascertained fact.

All through the book especial attention is given to those distinctive characters of a bird that help to make it recognizable from other species when alive, at a distance. A useful field manual is thereby provided. A dependable key to the various species makes possible the identification of any specimen in hand. The index contains all the common as well as the scientific names, thus making it easy to locate any bird, provided some name is known, even though this name be a very local, popular one.

Unquestionably the sixteen colored plates contribute very materially to the usefulness and attractiveness of the book. Thirteen are by Fuertes and the rest by Allan Brooks —all in the happiest vein of these accomplished artists. Twenty-one different game birds are figured in color, and the portraits are not only aesthetically satisfying, but eminently informative as well—two qualities which are not necessarily associated. The figures depict the birds in their characteristic, or usual, Californian environment—and let me emphatically state that these are no T-perch effigies, but real live birds, transferred in miniature to the printed page, retaining all the vitality of a "cinematic" likeness. For instance, feel the perceptible "honk" of the geese on plate 6, or the hurry of the rail stepping off on plate 9; or the quiet animation of the quail in plate 1, or the dynamic quality of the mudhens of plate 10. The ninety-four line drawings in the text serve largely to illustrate characters of plumage, bill, or feet, such as are especially helpful in identifying the different kinds of game birds.

Much credit is due to a Berkeley gentleman, whose name is withheld, and to Miss Annie M. Alexander for providing the "sinews of war"; to the former for supplying funds to carry on the economic work and to the latter "for the continued financial support, furnished in generous measure" to the Museum of Vertebrate Zoology, through whose opportunities the game bird book was brought to a conclusion.

Certainly everyone interested in California birds will wish to possess this book. If little has been said directly concerning the text, it has been because the reputation of the authors has seemed to the reviewer to render such special commendation superfluous. From Grinnell, Bryant, and Storer a high grade of work is a matter of course, since they stand high in the Bradstreet of ornithology. Theirs must be the satisfaction of craftsmen who have done something better than it has been done before; and they are to be congratulated for having so worthily represented their institution in the commemorative series of the Semicentennial of the University of California.—W. K. Fisher, *Hopkins Marine Station of Stanford University, Pacific Grove, California, February 8, 1919.*

Some Recent Investigations on the Food of Certain Wild Birds. By Walter E. Collinge, D. Sc. F. L. S. The Journal of the Board of Agriculture, vol. xxv, September, 1918, pp. 668-691, 17 diagrams in text.

Under the above title, Dr. Walter E. Collinge, now the foremost economic ornithologist of Great Britain, throws new light on the economic value of nine species of British birds. The three main points made in the introduction are: Need for more knowledge on the food habits of birds, because of their direct relation to agriculture and food supply; the intricacy of the problem; the casual and unscientific manner in which the subject has been treated in the past. The

food habits of the same birds as are here studied were presented in a paper by the same author, published in 1913 under the title "The Food of Some British Wild Birds". The method used in the earlier paper in estimating the crop and stomach contents was that known as the numerical method. The present paper is the result of a re-investigation, using the volumetric method. Under the heading of methods, a discussion of the numerical as compared with the volumetric method is given, with the conclusion that the ratio of each element to the average capacity or cubic contents of the bird's stomach gives the most accurate idea of the relative proportions of each kind of food. It is pointed out that this method, so widely used in the United States, is here practiced for the first time in connection with British birds. An attempt is thus made to state in definite figures the actual percentages of the different kinds of food consumed by each species during a whole year. The evidence is presented after an examination of 3670 adult specimens obtained during each month of the year, and 595 nestlings.

The treatment under each species consists of introductory statements, followed by post mortem records, food of nestlings, and a conclusion based on the evidence as to the economic status of the species. The change in method leads the writer to change his stand regarding the economic status of the Missel Thrush. The judgment after a numerical analysis of the food led to the statement that the Missel Thrush "for four months in the year does more harm than is counterbalanced during the remainder of the year". The judgment after a volumetric analysis leads to the statement: "In spite of its depredations in fruit orchards, this bird must at present be regarded on the whole as beneficial".

It is pointed out that the House Sparrow is one of the best-known birds in history, probably being known to people of whom we have no written records. "When writing was invented the Sparrow was selected for the hieroglyphic symbolising enemy, and proofs of its destructive habits have been cited by certain authors showing that it has been the enemy of mankind for more than five thousand years". Investigation of the food habits of this bird does not alter the attitude taken many years ago. The Rook is shown to be more harmful than beneficial, in the present abundance of this species. The injury to seed corn and other crops by the Skylark is far outweighed by the benefits it confers in destroying injurious insects. The Green Woodpecker is shown to destroy large numbers of injurious insects and to seldom, if ever, attack sound trees. It is, therefore, "deserving of every protection". The injuries inflicted by the Sparrow Hawk "are considerably in excess of the benefits it confers, and in consequence it should be afforded no protection". The Kestrel is a bird "certainly deserving of very strict protection". The Wood Pigeon probably consumes 57 pounds of food per year. Of this about 35½ pounds is grain, clover, roots and pulse, 20½ pounds of weeds, grass, earth-worms, etc., and about one pound of slugs, snails and insects. The writer, therefore, advocates the destruction of this bird as a pest. The food habits of the Lapwing demonstrate the need for "prohibition of the taking or killing of this bird or its eggs throughout the year".

Of the nine species of wild birds the House Sparrow and the Wood Pigeon are shown to be distinctly injurious. Because of their abundance, two others, the Rook and the Sparrow Hawk, are also injurious. One, the Missel Thrush, although as a rule beneficial, is sometimes locally too numerous. The Skylark, the Green Woodpecker, the Kestrel and the Lapwing are highly beneficial. Strong repressive measures against the first category, the withholding of protection from those of the next two categories, and the strict protection of the four beneficial birds are advocated. The paper is illustrated by seventeen diagrams, showing the proportional amounts of the different kinds of food, and a bibliography, citing twenty-three papers, is appended.

Dr. Collinge in casting aside the numerical method for the American method of computing the stomach contents of birds makes it appear probable that the latter will be universally used in the near future, with the result that the work of economic ornithologists throughout the world will be directly comparable. Heretofore, because of the wide difference in method it has been practically impossible for Americans to profit by the work of Europeans.—HAROLD C. BRYANT, *Museum of Vertebrate Zoology, Berkeley, California, January 1, 1919.*

MINUTES OF COOPER CLUB MEETINGS

SOUTHERN DIVISION

SEPTEMBER.—The meeting of September 26, 1918, was called to order by President Miller, with members Daggett, Holland, Howard, Howell, Law, Mrs. Law, Lelande, Little, Owen, Reis, and Willett

present, and as visitors Mesdames Holland, Howard, and Howell. On motion by Willett, seconded by Lelande, those members nominated at the August meeting were duly elected.

Names of new members were proposed as follows: J. J. Furber, Klamath Falls, Oregon, Dr. L. E. Hibbard, Burns, Oregon, and Dr. Geo. W. Field, Washington, D. C., proposed by Geo. Willett; H. L. Dillaway, Everett, Washington, by Walter P. Taylor. From the Northern Division: Maria V. Ballard, Spokane, Washington, by Dr. H. C. Bryant.

Mr. George Willett told his summer observations of breeding conditions at Malheur Lake, Oregon, and of the effort being made by real estate promoters to have this lake drained. Investigations indicate that the land is an alkaline basin, too saline for agricultural purposes, since there is poor drainage, and therefore no legitimate reason exists for its reclamation. Furthermore, there are untold acres of untilled land on its borders, and the abutting property owners around the lake are practically unanimous in opposition to draining the lake, foreseeing their own ruin in such procedure.

On motion by Lelande, seconded by Daggett, a resolution was passed protesting at the proposed drainage plans, and copies ordered sent to the Governor of Oregon and to the State Land Commissioner of Oregon.

Mr. A. B. Howell, just returned from four months in southern Arizona for the Biological Survey, gave some side lights on his trip. Travel was difficult, and two years drouth made waterholes scarce. On the other hand, cloudbursts complicated matters at times. His entire outfit, except specimens, was submerged by one. A broken differential 70 miles from a railroad and 24 miles from a water hole, added to the spice of Arizona's worst desert. Mammalian life had been decimated, and many birds did not breed at all this spring. While he made no new state records of birds, there were many new local records. His route zigzagged across the portion of Arizona lying south of the Southern Pacific Railroad, from Yuma to Tucson, ending with a month in the Catalina Mountains.—J. Eugene Law, *Secretary, pro tem.*

December.—Regular monthly meeting of the Cooper Club, Southern Division, was held at the Museum of History, Science and Art, at 8:00 p. m., December 26, 1918. Members present were: Messrs. Appleton, Barnes, Brouse, Chambers, Hanaford, Rich, Reis, Robertson, Willett and Wyman. In the absence of President Miller, Vice-president Willett occupied the chair.

Minutes of the November meeting were read and approved, and October minutes of the Northern Division were read. On motion by Dr. Rich, seconded by Mr. Chambers, the Secretary was instructed to cast an electing ballot for the parties whose names were presented at the previous meeting. New names presented were: Raymond Jones Middleton, Jeffersonville, Penn., and Charles Irving Rawson, Oxford, Mass., by W. Lee Chambers.

The death of Olive Thorne Miller, for years a Cooper Club member, having been anounced, it was deemed proper that the Club should pass resolutions of regret, and Dr. L. H. Miller was appointed a commitee of one to draft such resolutions. Owing to the small attendance it seemed best to defer nomination of officers for the coming year until the January meeting, and on motion by Mr. Chambers such postponement was ordered.

Formal business matters disposed of, Judge Barnes favored the members with an interesting talk on his experiments with the Trumpeter Swan, and numerous species of wild geese, in captivity. He spoke also of conditions affecting the nesting of the Wood Duck, on the Illinois River. Adjourned.—L. E. Wyman, *Secretary.*

NORTHERN DIVISION

November.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology on the evening of November 21, 1918, at eight o'clock. Dr. Evermann presided, and the following members were present: Messrs. Anderson, Bryant, Cohen, Garlough, Grinnell, Hansen, Jacobson, Kibbe, Labarthe, Lastreto, Leggett, Stivers, Swarth; Mesdames Allen, Bamford, Ferguson, E. Ferguson, Griffin, Grinnell, Kibbe, and Wythe. The visitors present were: Mrs. Evermann, Mrs. Labarthe, Mrs. Swarth, Miss Alice Wythe and Mr. Humphreys.

The minutes of the October meeting were read and approved. Mr. A. S. Kibbe reported for the Committee on the Conservation of Wild Life.

The Club then enjoyed the privilege of hearing Dr. C. G. Stivers, Captain, Medical Reserve Corps, Aviation Department, who read entertaining selections from his exhaustive paper on "Bird Flight and Human Flight". Practical demonstrations of some

of the fundamental principles of aeroplane construction and of tests used to determine the fitness of men for aeroplane service were also most interesting. After discussion the Club adjourned.—AMELIA S. ALLEN, *Secretary.*

DECEMBER.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, December 19, 1918, at eight o'clock. Dr. Evermann presided and the following members and visitors were present: Messrs. Carriger, De Groot, Dixon, Grinnell, Hunt, Jacobsen, Kibbe, Labarthe, Lastreto, Leggett, Mailliard, Pemberton, Ray, Wheeler, Wright; Mesdames Allen, Kibbe, Knappen, and Schlesinger; visitors: Mrs. Evermann, Miss Mary Elizabeth Grinnell, Mrs. Pemberton, Mrs. Swarth and Mr. Lincoln.

The minutes of the November meeting were read and approved, and the September and November minutes of the Southern Division were read. Members already elected by the Southern Division were approved, and the name of E. B. Humphreys, Alameda, proposed by Donald A. Cohen, was presented.

Mr. Kibbe then appealed to the Club to cooperate with the Audubon Association of the Pacific in urging the passage of an ordinance to license cats in the city of Berkeley. Dr. Grinnell moved that the Chair appoint a member of the Cooper Club to join with Mr. Kibbe in working out a feasible mode of procedure and to report at the next meeting. The motion was seconded and carried. Mr. Roswell S. Wheeler was appointed.

A letter from the Pacific Division of the American Association for the Advancement of Science asking that the Cooper Club hold meetings at the time of the general meeting of the Association in the spring was read and favorably acted on. Mr. Mailliard then reported for the committee which had been appointed to recommend a proper depositary for ornithological notes, photographs, etc. The committee opposed the plan of dividing materials between a northern and a southern center, and on motion of Mr. Swarth, seconded by Mr. Mailliard, the Division voted in favor of appointing the Business Manager, Mr. Chambers, custodian of all literary and other materials deposited with the Club.

Nominations for officers for the ensuing year resulted in the placing of the following names before the Club: for President, Dr. Barton W. Evermann; for Vice-President, Mr. Jules Labarthe; for Secretary, Mrs. James T. Allen.

Mr. J. R. Pemberton then gave a most interesting talk on "Field Observations on Birds of Patagonia." Adjourned.—AMELIA S. ALLEN, *Secretary.*

JANUARY.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, January 16, 1919, at eight o'clock. Dr. Evermann presided, and the following members were present: Messrs. Bryant, Carriger, Dixon, Grinnell, Hansen, Hunt, Jacobson, Kibbe, Law, Loomis, Morley, Noack, Pemberton, Ritter, Swarth and Wright; Mesdames Allen, Bamford, Bridges, Culver, Griffin, Grinnell, Kibbe, Law, Lueddemann, and Wythe. Visitors recognized were Mrs. Bryant, Mrs. Evermann and daughter, Miss Ripley, Mrs. Pemberton, Mr. Bridges, Mr. Lincoln, Mrs. Noack and son, and Mr. Babcock and son. The minutes of the preceding meeting were read and approved, and those of the December meeting of the Southern Division were read.

Mr. Humphreys was elected to membership, and the following were proposed: Professor Ivan C. Hall, Berkeley, by Dr. Grinnell; John O'Connell, San Francisco, by J. S. Hunter; and Walter Sellner, San Francisco, by J. S. Hunter.

Resolutions of condolence relating to the death of Mrs. Nace, drawn up by Dr. Joseph Grinnell, were adopted on motion of Dr. Bryant, seconded by Miss Culver.

Since Mr. Wheeler was absent, Mr. Kibbe reported for the committee appointed to investigate the possibility of introducing an ordinance requiring that cats be licensed in Berkeley. The committee began its work by gathering data from other cities where such an ordinance has been adopted.

Elections for the year 1919 resulted as follows: Dr. Barton W. Evermann, President; Mr. Jules Labarthe, Vice-president, Mrs. James T. Allen, Secretary.

Mr. Swarth then reviewed the history of the study of the Fox Sparrow, showing an interesting series of type-specimens, many of them borrowed from eastern collections.

Mr. F. C. Lincoln, Pigeon Expert of the Western Department, United States Army, then spoke on the Military Use of the Homing Pigeon, while two of the birds, removed from the carrier baskets used by the army, watched the audience from their collapsible aviary and winked knowingly as the members of the Club began to discuss the homing instinct. Adjourned.—AMELIA S. ALLEN, *Secretary.*

For Sale, Exchange and Want Column.*—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. Lee Chambers, *Eagle Rock, Los Angeles County, California.

For Sale—One complete file of Bird-Lore, all in original covers; also many odd numbers of Bird-Lore. For sale also, one complete set, 68 parts, all in original covers, of Animate Creation.—E. W. Hadeler, *Painesville, Ohio.*

Wanted—A copy of Birds of Costa Rica, by M. A. Carriker, Jr., published as Annals of Carnegie Museum, in 1910.—Austin P. Smith, *Dos Cabezas, Arizona.*

R. C. McGregor, *Bureau of Science, Manila, P. I.*, wants Richmond's List of generic terms proposed for birds during the years 1890 to 1900, inclusive, etc., which was printed in *Proc. U. S. Nat. Mus.* (1902), xxiv, 663-729, and he will give one dollar for a copy, either author's separate or excerpt, and no questions asked.

Exchange—I have the following publications bound in half morocco, to exchange for others not in my library: N. A. Fauna, nos. 8, 25, 28, 29, 31. What have you to offer?—W. L. Burnett, *Colorado Agricultural College, Fort Collins, Colo.*

For Sale or Exchange—Almost complete files of Oologist, West American Scientist, Wilson Bulletin, etc. Wanted, Wilson Bulletin no. 94, Ridgway's Birds N. and Mid. America, vols. vii and later, Sage's Birds Connecticut, Wayne's Birds South Carolina, etc.—F. L. Burns, *Berwyn, Pa.*

Would like to join someone on a collecting trip this spring, either to the Channel Islands, or on main land. Could take auto at my expense.—J. Frank Wilson, *337 Highland Place, Monrovia, Calif.*

Skulls and skeletons cleaned by a safe, up-to-date method. Send for my schedule of prices. References: California Museum of Vertebrate Zoology and California Academy of Sciences.—Lula M. Burt, *2734 Forest Ave., Berkeley, Calif.*

I Want a complete set or odd volumes of the Proceedings of the Biological Society of Washington. Will give good exchange or cash.—W. Lee Chambers, *Eagle Rock, Los Angeles County, California.*

I Desire good museum material with complete data. Birds, eggs, marine forms, etc. Can furnish any of the southern birds, and have a good series of ducks: Gadwall, Blue-winged Teal, etc.; also shorebirds, geese and herons. Address Alfred M. Bailey, *Louisiana State Museum, New Orleans, La.*

Will exchange full sets of the following: A. O. U. nos. 52, 14, 71, 154, 157, 162, 114.1, 172a, 174. I want skins of any of the geese and swans, and of the Limicolae and Gallinae.—Fred L. Granville, *2238 Canyon Drive, Hollywood, Calif.*

MEETINGS OF THE COOPER ORNITHOLOGICAL CLUB

Northern Division: 8 p. m., third Thursday of month, at Museum of Vertebrate Zoology, University of California, Berkeley. Take any train or car to University Campus. The Museum is the corrugated iron building on south side of campus just north of football bleachers.—Mrs. Amelia S. Allen, *Sec'y., 37 Mosswood Road, Berkeley, Calif.*

Southern Division: 8 p. m., last Thursday of month, at Museum of History, Science, and Art, Exposition Park, Los Angeles. Take "University" car south on Spring St., or "Vermont and Georgia" south on Hill. Get off at Vermont and Thirty-ninth, and walk two blocks east to Exposition Park. The Museum is the building with the large dome.—L. E. Wyman, *Sec'y., care of Museum.*

Intermountain Chapter: Get date and place from the Sec'y., Ashby D. Boyle, *351 5th Ave., Salt Lake City, Utah.*

San Bernardino Chapter: Get date and place from the Sec'y., M. French Gilman, *Banning, Calif.*

THE CONDOR

A Magazine of Western Ornithology

Volume XXI May-June, 1919 Number 3

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COOPER ORNITHOLOGICAL CLUB

THE CONDOR

A Magazine of Western Ornithology

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Issued *June 6, 1919*

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THE CONDOR

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Volume XXI **May-June, 1919** **Number 3**

[Issued June 6, 1919]

SOME NOTES ON THE EGG OF *AEPYORNIS MAXIMUS*

By WM. C. BRADBURY

WITH FOUR PHOTOS

IT HAVING been suggested to me that probably many readers of THE CONDOR had never seen the egg of the extinct *Aepyornis maximus*, and that a description and photographs would be acceptable, I submit the following.

Some three years ago, I first saw an egg of this species in the American Museum of Natural History, New York City, and immediately became imbued with a desire to possess one. Dr. F. A. Lucas, Director of the American Museum, kindly gave me the addresses of several parties in London likely to be in a position to furnish a specimen, and with these I carried on a correspondence for nine months. This was unsuccessful, there apparently being no example of the Aepyornis egg to be obtained there. In discussing the matter with Dr. Wm. T. Hornaday about that time, this gentleman at once put me in touch with the administrators of the estate of the late Robert Gilfort, of New Jersey, a world-wide traveler and collector, from whom I was fortunate enough to secure the specimen here figured.

Deciding that the egg would make a more attractive exhibit for the average visitor if accompanied by eggs of modern species, varying in size from the largest to the smallest, I supplied these from the material available (see fig. 20). This exhibit was then presented to the Colorado Museum of Natural History, where it takes a place among the special features associated with the "Bradbury Collection of North American Birds' Eggs."

Nearly or quite a perfect oval in form and measuring 9 9/16 by 13 inches, this egg is in a wonderfully excellent state of preservation. It weighs but 81 ounces, and it is doubtful if it can be termed fossilized, or "replaced" through mineral deposition; rather, is it preserved by an impregnation of iron, associated with calcite. There is some slight variation in color, but this is of a negligible character and the color tone may be described as a more or less uniform "buffy brown" (see Ridgway's *Color Standards*).

While figure 21 is a good representation of the egg, it fails to reveal sufficient minuteness of detail in texture of surface, and for that reason a natural-

size illustration is shown in figure 22. The reverse side (see figure 23), that upon which the egg may have lain for a long time, presents a roughened surface, the result of concretionary deposits of lime, a condition frequently noted in fossils of certain periods. No attempt has been made to remove these small, irregular nodules. Indeed, they, together with the opportunity they present for chemical analysis, furnish unquestionable proof of the genuineness of the egg, the value and importance of which most collectors cannot help but appreciate in a subject of such rarity.

Whether the shell of the egg is fossilized or not, its original contents has nearly disappeared; for, by holding the egg between the hands and reversing it end for end, one can plainly hear and feel what appears to be several tablespoonfuls of fine, sand-like material, or possibly thin scales. This probably does not exceed two ounces in weight. As stated, the present weight of the egg is but 5 pounds, 1 ounce, and its displacement is 18 2/3 pints, equivalent to the displacement of 183 hen's eggs.

Were the shell and original contents fossilized, it would weigh (assuming the weight of lime stone for the purpose) about 51 pounds, 5 ounces. Based

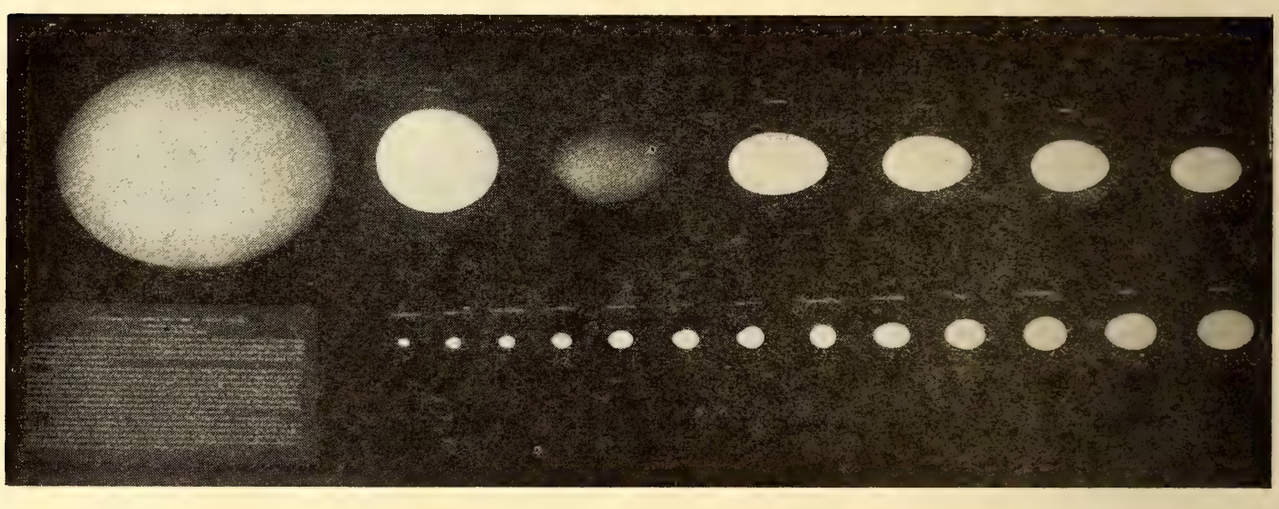


Fig. 20. Egg of Aepyornis (at left) in comparison with eggs of Ostrich, Emu, Albatross, Swan, Goose, Eider, Mallard, Hen, Marsh Hawk, Teal, Road-runner, Burrowing Owl, Bob-white, Flicker, Woodpecker, Lark Bunting, Bank Swallow, Goldfinch, Hummingbird.

on the average weight of 48 assorted hen's eggs used for the purpose, multiplied by 183 displacement measurements, its weight when fresh would be 22 pounds, 4 ounces. There being no fracture in the shell of the egg, its present thickness has not been determined.

All figures given in the label accompanying the exhibit are based on an average of a series of tests for displacement, these being made with thoroughly dried table salt. As both bulk and weight were employed in computing the relative sizes of the several eggs, the figures may be considered as substantially accurate. The descriptive matter on the exhibition label reads as follows.

"Closely related to the present day Ostrich and to the Moa of prehistoric times, the Aepyornis is known only through the scant fossil remains that have been unearthed from the sand-dunes of Madagascar. Like the Ostrich and Moa, it was without the power of flight and became extinct long before the first visits to the island by Portuguese and Dutch navigators. At that period, the natives claimed the bird still existed, but later investigations proved their

stories to be traditional. Indeed, there is no evidence to indicate Aepyornis survived until the appearance of man on the island.

"The first proof of the existence of this bird was brought to light through

Fig. 21. Egg of Aepyornis, upper side as regards probable original position; a little less than half natural size.

the finding of 'fossil' fragments of egg-shell, and these are presumed to be the basis of the story of the fabled 'Roc'. It was not until 1851 that perfect

examples of the eggs and a few of the bones were secured and sent to France, when Geoffroy--St.Hilaire gave them the technical name *Aepyornis maximus.* Eggs have been brought to light at rare intervals since then, the specimen here shown being the first to reach America. This was imported by the late Robert Gilfort, of Orange, New Jersey, and from whose estate it was purchased by Mr. Wm. C. Bradbury, and donated by him to the museum.

"Measurements prove this example to exceed, by a full half inch, the dimensions of other recorded specimens; but its giant proportions can not be appreciated except by comparison with modern eggs. Calculations in dis-

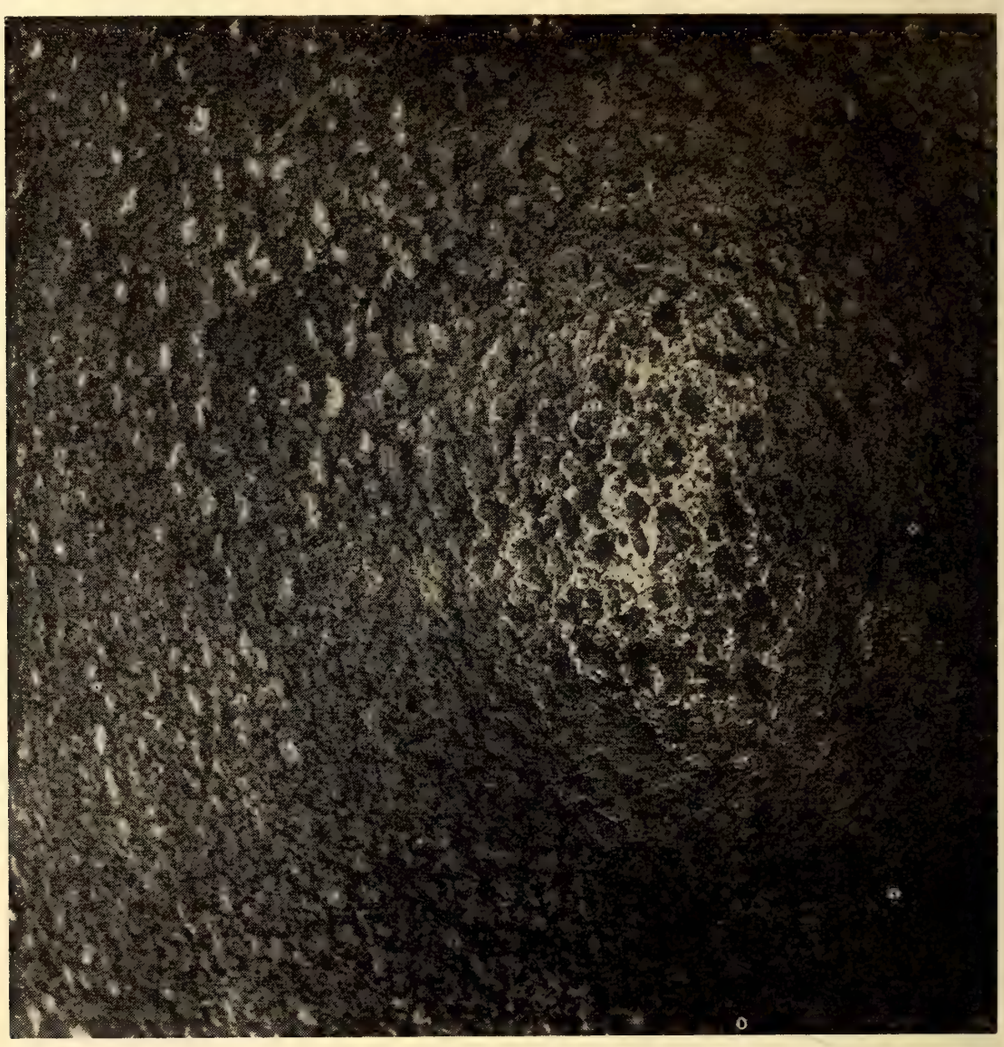


Fig. 22. Portion of surface of Aepyornis egg, natural size, to show detail of texture.

placement show the Aepyornis egg to be equivalent to each of the following number of eggs of modern species:

"Ostrich, 7 1/3; Albatross, 24 2/3; Goose, 40; Duck, 109 2/3; Hen, 183; Pigeon, 469; and Hummingbird 12,062.

"The dimensions of this Aepyornis egg are 9 9/16 by 13 inches. Insufficient skeletal remains have been discovered to determine the size of the Aepyornis. Complete skeletons of the Moa show the latter bird to exceed ten feet in height, while its egg measures but 6½ by 10½ inches. Comparative estimates to determine the height of the Aepyornis, however, are likely to be misleading, because of the evidence that birds do not always lay eggs to conform with their

size; until additional material is brought to light, the dimensions of the Aepyornis must remain problematic."

For assistance in the preparation of this article and the displacement

Fig. 23. AEPYORNIS EGG, SAME AS SHOWN IN FIG. 21, BUT OPPOSITE SIDE, SHOWING EXTRANEOUS CONCRETIONS PROBABLY DERIVED FROM GROUND ON WHICH IT LAY.

measurements showing the relative size of different eggs, as well as for photographs, I am indebted to Mr. J. D. Figgins, Director of the Museum.

Denver, Colorado, March 1, 1919.

AUTOBIOGRAPHICAL NOTES

By HENRY WETHERBEE HENSHAW

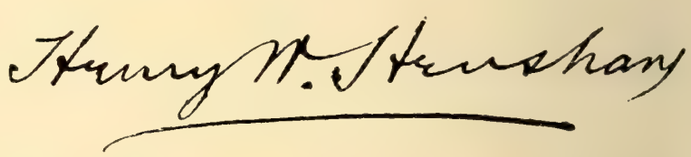
WITH PORTRAIT

PREFACE

THE FOLLOWING notes have been prepared at the request of the Editor of The Condor for publication in that journal. While not to be regarded as a complete autobiography, they touch upon the main incidents and activities of the author's life, particularly his ornithological work in the far west, the chief field of interest of the journal in which they are to appear. Their principal value to the reader will come from the side lights they may throw on the character and work of the men—some well known and others scarcely known at all—whom the author has been privileged to meet, and also the knowledge they may confer on the intimate personal history of times long past and now existent in the memories only of the very few.

Judging from his own tastes and present experience the author is of the opinion that the writing of autobiographies will never become a popular form of amusement. Nevertheless, fresh as he is from the difficulties attending the fixing of dates and events belonging to the dim past, he cannot but feel that, regardless of their own preferences, scientific men, if no others, owe this duty to their own and future times—a duty not to be lightly thrust aside.

February 3, 1919.



EARLY LIFE

As a man's career in the world is more or less closely connected with the place of his nativity, I may as well state at the outset that I was born in Cambridgeport, Massachusetts, March 3, 1850, the last of seven children. The windows of our house overlooked the marshes and tidal basin of the river Charles, and from it was visible the dome of the Boston State House. Thus I may fairly claim to be a Yankee by birth, and, as every genuine Yankee is wont to trace his ancestry back to the Mayflower, I may boldly claim the same distinction, at least on my mother's side.

It is often said of one who displays special aptitude for a particular pursuit or calling, as artist, musician, lawyer or what not, that he is born to it, meaning, perhaps, that his tastes and abilities are inherited. If there be any truth in the saying, it would seem to apply with special force to the naturalist, although I do not doubt that his tastes, even if inherited, are greatly strengthened or modified by particular environment or circumstances.

For myself, I seem to have inherited directly from my mother my love of nature and my desire to study her ways. Though no naturalist and with little or no exact knowledge of any branch of natural history, she possessed, nevertheless, an innate love of nature and a sympathy for all her creatures. From her I received my first lessons as an observer when she used to direct my attention

as a child to the beauty of the bark and foliage of trees, and point out their individuality and infinite variety of form and color. What seems to me even more remarkable, she taught me to see and admire their wierd beauty, after

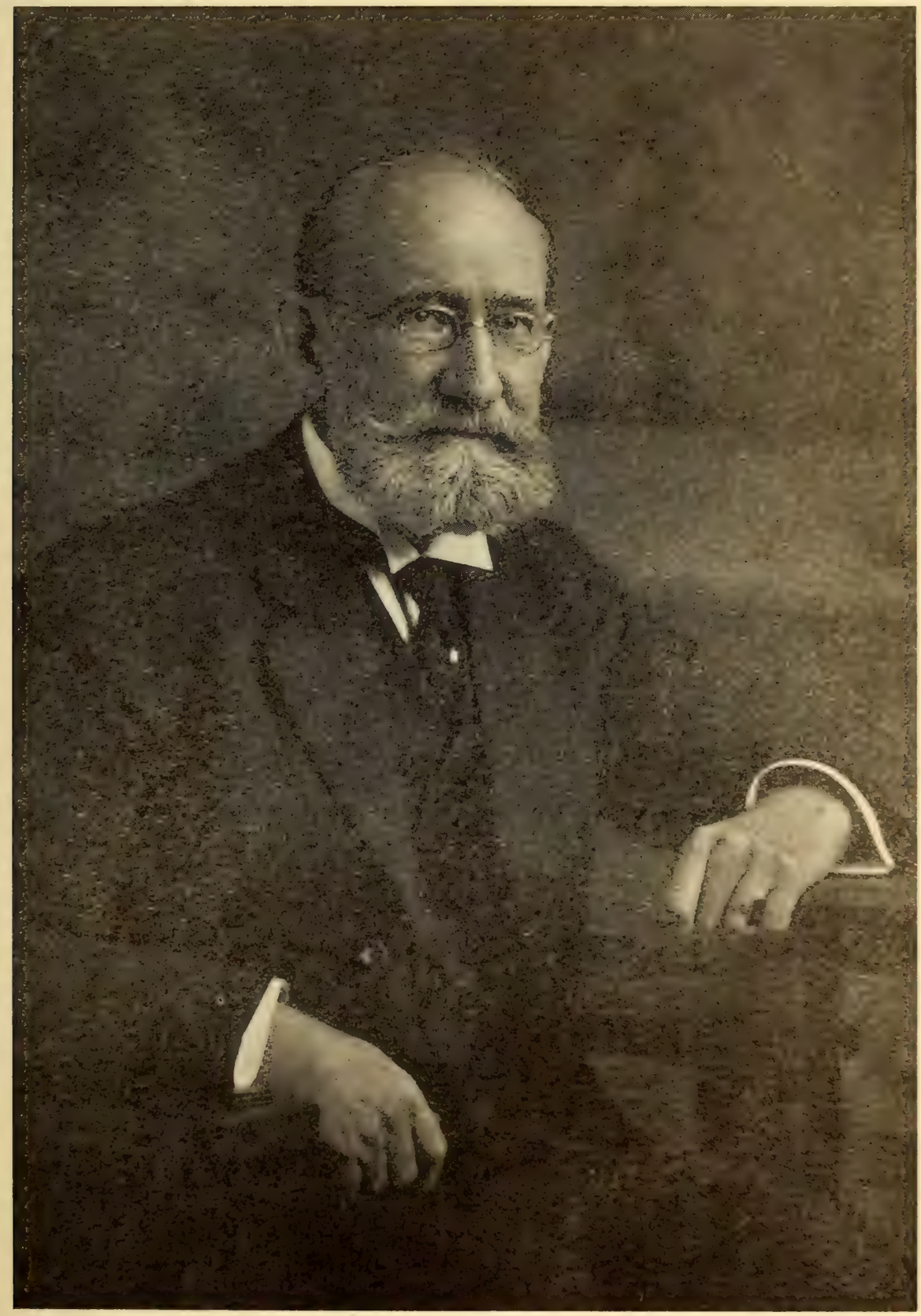


Fig. 24. Henry W. Henshaw—in 1913.

they were stripped of their foliage, especially as their branches were being bent and tossed by the eager winds of autumn and winter. She never studied

any books of natural history, so far as I know, but she had a keen appreciation of literary excellence, and was familiar with the best in English literature. She was a strong admirer of Thoreau's writings, which, among many other good books, she recommended to me while still a lad.

To her I owe such advantages as attach to a New England training, for when my father received an advantageous offer to enter into the book business in Chicago, and was inclined to the change, she dissuaded him on the ground that no pecuniary advantage, however great, could compensate for the loss to the children of an education amid New England surroundings.

An older brother, who fell in the civil war, had made a small mineralogical collection, though probably with no very definite purpose in view, and more than once she suggested to me the desirability of making that my own and of adding to it. But if I had any interest in minerals, which I doubt, it was not sufficient to impel me to study or collect them, though I well remember the little cabinet in which they were stored.

The Charles River marshes were only a few moments walk from our house, and its banks, ponds and ditches were the delight of my boyhood. In its waters I learned to swim, and its mud banks and clam beds proved an inexhaustible source of pleasure to myself and the other boys of the neighborhood. Many an afternoon we spent on its banks "playing Indian", the essential features of the game being a camp fire of drift wood and a goodly supply of clams dug from the mud flats at low tide for roasting or boiling after the supposed methods of the red man, who long before us had utilized the very same locality, as the beds of clam-shells testified.

In the Charles River marshes, too, I learned to shoot long before I owned a gun of my own, and, indeed, before my parents knew anything of my ambitions in that direction. This was when I was about ten or twelve years old, and was made possible because a chum, somewhat older than I, had been presented with a single-barrelled shot gun. It must have been made of good stuff, for when our shot gave out we used anything we could lay our hands on for projectiles, but found marbles particularly good. Having assured themselves of my competence to use a gun without endangering my own life or the lives of others, I was formally commissioned as the sportsman of the family. My principal game was the diminutive peeps, with "grass birds" in the late fall, and an occasional yellow-legs or plover, and, though the game was small and my bags smaller still, my enjoyment was immeasurable.

Like many other boys I was a lover of snakes, and frequently carried them home to show to my mother or anyone else whose interest could be counted on. They were chiefly green or garter snakes, which in those days frequented a bit of woodland on the banks of the river known as Pine Grove. This locality later became the site of the Alvin Clarke observatory where Clarke made the big lenses which in turn made his fame known to the uttermost parts of the earth. Here, too, was the summer home of certain of our common birds, including the pine-creeping warbler and the purple finch, with other common species, which became well known to me even before I knew their names.

On one occasion I learned that not every one was as tolerant of the presence of snakes as my mother. On my way home with a couple of snakes in my pocket I was accosted by a lady as to the whereabouts of a certain near-by street. While I was directing her she suddenly gave a loud shriek, grasped her skirts with frantic haste, and fled as one who had seen a vision. And in a way

so she had, for one of my pets, perhaps finding my pantaloons pocket too warm for comfort, had climbed up under my jacket, and, sticking his head out of the nearest opening, was gazing steadily at my interlocutor and vibrating his tongue after the manner of snakes who seek to know what is going on about them.

But my interest in things that walk, crawl or swim does not seem to me to explain satisfactorily my very particular interest in birds nor why, so far back as I can remember, I was always asking the names of birds and seeking information about their habits. I may add that such questionings availed me little, for in those days the man who knew the names of more than a half dozen common birds was rare indeed, while books on the subject, save Audubon, Wilson and Nuttall, were rarer still. What a Godsend to me a few years later was Volume IX of the Pacific Railroad Reports and the Smithsonian Check List! And what an ornithologist I thought myself when, by its aid, I had memorized the scientific names of our common birds, till then, as it seemed to me, only half known, since known only by their vernacular names.

FIRST MEETING WITH WILLIAM BREWSTER

And so the years passed, as years have the habit of doing, slowly then, but, alas, how rapidly now, till the year 1865, when I entered the Cambridge High School to prepare for Harvard. Up to that time I had made a small collection of pinned butterflies and moths as so many boys do, and also had gathered the nucleus of a small collection of eggs. In endeavoring with the aid of a classmate to establish the identity of a set of purple finch's eggs, I stumbled on the fact that in our class was a boy by the name of William Brewster, who not only had a collection of birds and eggs, but who also knew how to "stuff" and mount birds. Now above all earthly things the ability to "stuff birds" seemed to me the most to be desired, but up to then I had met no one who had the art. Recess was a long time coming that morning, but come it did finally, and at once I made my way to a young fellow pointed out to me as Brewster, who was standing against the iron school fence with both arms extended along the railing. I can see him now as I saw him then more than a half century ago. Boys are not apt to be very formal, and soon we were chatting about birds and their eggs. The subject of stuffing birds being broached, Brewster told me that he had already skinned, and planned to mount that afternoon, a ruddy duck, and, if I cared to see him work, I was welcome to come to his house. A trivial enough event our meeting was, as it seemed then, but it proved the prelude to a close friendship which has continued for more than fifty years without break or misunderstanding, and is likely to continue to the end, or, perhaps, to put it in another way, to the beginning.

Brewster had been studying birds, as well as collecting them, for several years, and what he had gathered already gave promise of becoming the finest private collection of birds, nests, and eggs ever gathered in this country. This collection, now numbering some forty thousand skins, as I write these lines, is being transferred as a gift to the Cambridge Museum of Comparative Zoology which it will permanently enrich.

Almost at the start Brewster and I became intimate comrades, and every moment we could spare from our studies, including no doubt some which we could ill spare, were devoted to the hills, swamps, woods, and fields of Cambridge, Belmont, Waltham, and Concord. I doubt if local

knowledge was ever absorbed more rapidly than by me under Brewster's tuition, and soon it was a rare event to see a bird I could not name on sight or by its song.

About this same time I became acquainted with Ruthven Deane, who lived hard by the Brewster place, who already had the nucleus of a collection of mounted birds, but who, also, soon abandoned the time consuming method of mounting birds on stands in favor of the quickly made bird-skin. His business career in Boston had already begun, later to be transferred to Chicago, but such spare time as he had, especially holidays and Saturday afternoons, was spent in the woods with his collecting gun, and we had many a good tramp together, often with Henry Purdie as a third.

HENRY PURDIE

At that time Henry Purdie was connected with the Massachusetts State Board of Charities, and his office was in the State House in Boston. He also was engaged in making a small but choice collection of birds and eggs, chiefly local species; but I think he was always more interested in studying live birds and listening to their songs than in collecting dried skins. His interest in bird literature, too, was strong, and the advent of a new local check list or a new book on birds was always hailed with pleasure. In pursuit of information on his favorite subject he spent many hours weekly in the libraries of Boston. As a consequence he was remarkably well posted on general American bird literature, and nothing pleased him better than to be called upon to share his knowledge with and for the benefit of others. He cared little for the fame of the author and wrote very little for publication. In later years he became an excellent field botanist, and came to know the plants of the general region around Boston very well indeed. He was one of the rare spirits who are happiest when serving others, and it is given to but few men to make as many sincere friends as he did.

E. A. SAMUELS

I fancy there were few boys who collected birds' eggs round Boston in the sixties who did not know E. A. Samuels. He was then connected with the State Agricultural Department, and his office was in the Boston State House. At that period he was collecting data for a book on the "Birds of New England and Adjacent States", the advent of which was eagerly looked for by us boys for several years. Samuels was very pleasant, was always ready for an exchange of eggs, and ever alert for any original data that could be utilized in his forthcoming book, which in large measure was a compilation, though a very useful one. He was a keen sportsman and an ardent fisherman, and is, perhaps, most widely known for the many excellent articles on these subjects he wrote for sportsman's journals.

EMMANUEL SAMUELS

Mention of the son naturally recalls to mind the father, Emmanuel Samu-
whom I never saw, but who possesses some interest for Californians, inas-
ı as, under the joint auspices of the Smithsonian Institution and the Bos-
ɔciety of Natural History, he visited California in 1855 (leaving New York
5). His mission was to make collections in all branches of natural
in addition, to gather the seeds of as many California trees and
'ble for distribution over the country. This latter duty was im-
'by the Commissioner of Patents at Washington. For the Pat-
to be the birth place of that lusty offspring, the Department

of Agriculture, which did not enter upon its separate existence till July 1, 1862, when the Honorable Isaac Newton was appointed first Commissioner.

Samuels' principal collecting ground apparently was Petaluma, but he visited Tomales Bay and probably other localities in that general region. The Smithsonian's share of the birds he gathered was 103 specimens and a few eggs, by no means an insignificant number when are considered the multifarious duties of the collector. His memory is embalmed in the A. O. U. *Check-list* under the name of *Melospiza melodia samuelis* (Baird). Recently I had the pleasure of examining Baird's two types of the form, the true one being no. 5553 of the National Museum Catalogue, and both skins are in excellent preservation.

ACQUAINTANCE WITH C. J. MAYNARD

C. J. Maynard, living hard by in Newtonville, was then becoming active as a bird collector and dealer, and Brewster and I soon made his acquaintance, and from him learned to make a "bird skin", when the real business of collecting birds for scientific study began for each of us. The so-called New England type of bird skin was soon evolved, due in no small measure to Maynard's skill, and was, I believe, so far as speed in preparation and general excellence goes, superior to anything made up to that time. In my eyes the final touch was attained by the adoption of the Coues method of wrapping the green skin in filmy cotton till dry. Brewster soon abandoned mounting birds on stands for the much quicker and more practical method of making skins, while I had nothing to abandon being still a novice in the taxidermist's art. Not a single specimen of my skill as a taxidermist survives, and the only triumph I achieved in that direction was a fox sparrow. For its life-like appearance I accept the authority of our house cat. As the mounted bird stood drying on the mantelpiece of my bird room she mistook it for the real thing and, making a wild leap, secured it before realizing her mistake.

ACQUAINTANCE WITH R. E. C. STEARNS

It was in 1868 that I came in touch with R. E. C. Stearns who, though a New Englander by birth, had lived a decade in California, where he went in 1858, but was then sojourning for a time in Boston. Not only was he a learned and enthusiastic conchologist, but he was one of the most genial and delightful of men. Though much older than I, we soon became great cronies, for he never became too old to love and sympathize with the aspirations of young people. Many were the happy hours I spent with him in his Boston home, helping him pack and unpack shells, and listening to the anecdotes of which he had a rare fund, including his experiences in that land of romance, California. Under his tutelage I became greatly interested in shells and soon had a collection, largely gifts from his duplicate series. Indeed he used to say that he had stolen me from the ornithologists. But as I now see, my interest in shells was largely due to personal association with Stearns, and subsequently was replaced by the more absorbing interest in bird life. The little shell collection, however, made at that time was not without value, and now is in Wellesley College.

(*To be continued*)

A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

(*Continued from page 11*)

VI. THE COULEE OF THE MEADOWS

FROM the windmills on the distant horizon comes the Coulee, winding languidly down through the meadows till nearly losing itself in the green-veiled waterway under the grass-carpeted span of the Bridge over the Coulee; winding languidly on, narrowing in between grassy points and tule promontories, broadening out between retreating bench lines whose widely opposed faces tell of the greater waterways of the geologic past; winding on, curving gently around green pastures, offering shallow drinking places to thirsty cattle; meandering down, deepening in between narrow banks of high marsh vegetation, till it passes under the Bridge of the Grebes and the Ruddies, and beyond swerves out to lose itself in the lake. From the widely opposed faces of the retreating bench lines looking down on its greatest bend, a beautiful picture presents itself; the Coulee, lying open under the sky, between the vivid greens of its marshy borders and the soft straw colors of the wide wheat fields, its pellucid surface dotted over with resting water fowl.

Under a cloudless sky on a quiet day, it is easy to imagine, a trick of the sun would turn the peaceful waterway to a little river of blue. On a windy day riffled patches of ultramarine mark the current between brownish borders of water weeds that raise their heads to the surface—a surface tracked with the irregular cross lines of many feathered swimmers.

Meandering down between the broad Sweetwater lakes, which often roll with white caps, the placid Coulee, sheltered by a dense growth of marsh vegetation and in places by high protecting banks, offers safe harbor and unbroken quiet for families of tender young. For some weeks I was living near it, beside East Sweetwater, and the voices of young were always to be heard. The narrowest parts were veritable nurseries, alive with families of Ducks and Dabchicks, and innumerable broods of Coots. I could get close to them in the pasture—that pasture of pleasant memories, where friendly horses came for a wisp of grass or a pat on the neck, or contentedly stood around while busy Cowbirds walked unafraid about them; where, too, the belated Norwegian milk-maid and I, going to bring the cattle home by the light of the moon, mistook the dim forms of horses for cows, and in our search had to follow faint trails now east now west; the milk-maid's weird Norwegian call, urgent and commanding, penetrating far into the dusky distances. In the pasture, too, when I was trying to watch Ducks from the umbrella blind some distant passersby mistook it for "some kind of an animal"; though, when the prairie wind made it so ineffective that I took it down, they recognized it for "some kind of a tent"!

Cow paths followed the outlines of fingers of marsh the Coulee laid on the pasture, and led on behind a border of cat-tails where, mixed with the quack of a Mallard and the voices of young, the rasp of a Coot made me peer down, and discover, to my amusement, a nervously veering white bill between the green stalks. Close by was one of the favorite feeding grounds of the Coots

and their families, a length of Coulee green with water plants. The adults ran through them freely, splashing up the water, but two half grown young which, on my approach, rushed out of a cane border had to waddle through the thick surface weeds, while their anxious parent on the opposite bank turned from side to side calling *ep, ep,* in worried tones as she watched their slow progress.

A much smaller, red-headed chick, looking as if just out of the nest, followed its—father, let us say—slowly and elaborately through the green mass. How could it plow its way through? Did it follow where he had parted the weeds? As it fell behind, he kept calling encouragingly, *ek-ek-ek-ek-ek* and waited for it. When the little tot caught up to him it was so hungry that, between feedings, it weakly fluttered its tiny finny wings, begging him to hurry. The—mother, let us say—was a short distance back down the Coulee with several young in her charge. Three, there seemed to be at first, but more kept coming out of the cat-tails until there were seven Redheads in all. One of these, however, evidently belonged to other parents, for although I could not imagine how any Coots could tell each other apart, it left the six that had joined their mother and swam back down the Coulee loudly calling for its own parents. When the six had been seen by the father with his one, he swam back toward them, and the mother seeing them coming left the six, and swimming up to the one little one which had been following its father, was apparently so glad to see it that she just had to feed it herself—several times—before she could let it go.

Why should one parent have so many more young to care for than the other, I asked myself. Does the mother naturally take the greater responsibility for the young? Or, is one parent a more capable and therefore popular provider than the other? Or is it after all just a matter of chance following? A bit of evidence was supplied at the juncture. A second Redhead came up and joined its father and the one brother; but, as if realizing that it had made a mistake, stayed only a few moments, quickly swimming back to its mother and her five. There surely was no chance about that. Perhaps in this case, though, the little fellow wanted to be with his brothers. Who can say? Another bit of testimony was stumbled on, one day, when three hairy young were being cared for by one parent, though she was devoting herself exclusively to one of them at the moment. Presently the other parent swam up and, singular as it looked, he too proceeded to feed that one chick. Though it was probably the hungry one of the brood—trust parents to know—it certainly did seem unnecessary for such a scrap to be fed by two. Each time the old ones elaborately swam away from it in opposite directions, picked up food, and swam back to it. Before long, however, the little fellow who was in such apparent danger of over-feeding swam off to the visiting parent and the two went away together. In this case also, the young deliberately (?) changed from one parent to the other.

When watching the still more unequally divided family, that of five and one, I had just made a note of the fact that the adults were getting food from the surface or close below—not diving—when the mother as if to testify to the danger of generalizations from insufficient data, began to dive. Four times a minute was the fastest that I counted, but besides giving the food to the young, she took time to shake her wings and pick around from the surface. A parent whom I found in another part of the Coulee had four Redheads with her but only one hungry enough to stay close by, so she fed him exclusively and rapidly, diving and feeding, diving and feeding, in a very business-like way. I did

not time the diving then, but later, when she seemed to be feeding much more slowly, she dived and fed five times in a minute. She often dived with a splash that sent the ripples circling out, so that when she came up she fed the little one inside the rings. Generally the mother swam over or handed the food to the little one, but sometimes he reached out to take it for himself. While this Coot, on the opposite side of the Coulee from me, procured food mainly by diving, a parent in the thick water plants on my side of the Coulee fed exclusively, so far as I observed, from the surface plants; and as I found both parents and young in the same places doing the same things at different visits, I inferred that each adult had its favorite method and feeding ground. Out in the clear water of the middle of the Coulee, one day, I found two old Coots a few feet apart, diving and feeding hairy young, one a single one, the other, two.

The value of the conspicuously colored heads of these nestling chicks was demonstrated when a family was being fed in the dark shade of the cat-tails; for I, at least, could never have differentiated them from their shadows. When the nestling plumage is lost, the young are better able to fend for themselves, besides which they talk so much that it would be hard indeed for their parents to lose track of them. A half grown, gray-headed youngster, crossing the Coulee, one day, seemed to keep its bill set open, giving vent to incessant weak cries. Its parent, following a short distance behind acted as if the iteration got on its nerves, swimming at the loquacious one with such an exasperated threating manner that it dived to get out of the way. In this Coulee nursery, the Coots were so generally seen doing something strenuous, forging ahead with curved neck outstretched expectantly, or rapidly diving and feeding young, that it was a pleasure to see one standing at rest, round and gray in a green cat-tail doorway, looking motherly and comfortable.

The voices of young Coots and Pied-billed Grebes were those most commonly heard along the Coulee. One of the striped necked Pied-bills that I happened on was revolving around its parent's bill, teasing in infantile tones; but the hard-hearted parent continued to plume her feathers as if unconscious of its presence. Two other young Pied-bills made a pretty picture sitting side by side on the water between the foot of a cluster of cat-tails and its reflection.

After a little they followed their parent into the green labyrinth, coming out into a cat-tail cove where they sat apparently enjoying the sun, as well they might, for although it was August 11 by the calendar, my fingers became cold writing down notes. A Pied-bill to which I came too close fidgeted so nervously that a self-possessed Ruddy Duck, sitting on the water behind it watched it scornfully—if one dare judge by attitudes—and finally made a rush at it for its foolishness, at which it disappeared below.

Ruddies dominated one section of the narrow part of the Coulee. Quite a little fleet went swimming by one day—eight downy young with dark crowns and dark lines through the eye, five adult drakes, and three ducks. Much to my surprise some of the blue-billed drakes were going through the curious antics that had marked the June season of courtship, and although this was August, the rattle of their castanets was often heard. Once I saw two drakes facing each other, going through their ludicrous performances. Another time when a peaceable looking neighbor Ruddy was sitting quietly on the water doing nothing to provoke him, a belligerent drake went through the whole role—did chin exercise, his haughtily arched head and forward pointing spike tail almost meeting, ruffled up the feathers of his back, pressed down his tail and made an excited rush through the water at the onlooker.

When the females or young were in sight one of the cocky drakes would often bridle, strike an attitude, and shake his castanets. And to my great amusement, an absurd downy duckling, in a brood of eight that swam by with their mother, swam with his spike tail up and made motions that suggested the chin exercises of his paternal parent! A blue-billed drake that I fondly imagined was that parent, stood watching the downy procession pass, looking as if he would burst with pride! Later I saw a number of these youngsters assuming the airs of their forbears. And late in August when I happened to cross the Belgrade Bridge just as the mother Ruddy passed below with her small brood, strange to say, she herself drew in her chin in the veritable manner of her little lord.

While Coots and Dabchicks and Ruddies seemed to make up the larger part of the population of the Coulee, there was a variety of families enjoying the safe harbor. Under the cat-tail wall of the nursery, one day, a family of pretty little ducklings was huddled close together with heads tucked down in their feathers, taking a noonday nap; while just inside the first row of cat-tails, their mother, whom I took for a Pintail, was sitting on a platform resting, but through her green screen keeping a watchful eye upon her sleeping brood. Seeing me, she rose to her feet and turned to face me for closer scrutiny, but discovering nothing alarming let her little ones sleep in peace. Another brood, preceding their mother, swam just inside a cat-tail screen whose stalks were vivified by the sun, their file crossing the shadowy open spaces like the ghosts of Macbeth's dream. In another place a motherly Shoveller swam along trailing seventeen young. They appeared to be in two broods of slightly different sizes but I could not be sure enough of that to safely draw inferences concerning foster parents. A Duck with white at the base of her bill was doubtless a female Scaup, but no young were in evidence. Families of well grown Canvasbacks were seen out in the open at various points, up and down the Coulee. In one place they were riding out on the riffled purple water while lines of young Coots were keeping close under the quiet marsh grass border.

One day when absorbed in watching the ever shifting life of the Coulee I glanced up to find a big brown butterfly fluttering high over the water, the strong sunshine making it a joyous red against the blue sky. Another smaller brown butterfly with a subterminal band of red was seen and exquisite velvety red dragon flies with big eyes and bent legs were also greeted with enthusiasm; the pleasure of the sight in each case showing how little keen color there was in the landscapes of yellow grain fields and blue sky.

Although the most popular nursery of the Coulee was in the narrowest part bordering the pasture, where Marsh Wrens sang in the cat-tails and one heard occasional snatches of belated song from the Sora in the marsh and the Western Meadowlark in the pasture, there was much of interest in the wider parts of the Coulee beyond. From the top of the bench commanding the big bend one could look west down the narrow channel, and north up the broad north and south section of the Coulee. It was from this point of vantage that, on several different days, I watched one parent Coot on the bank opposite me diving and feeding its red-headed young inside ripple rings, and in the bend on the weed-covered surface of the sluggish water, saw the other parent feeding regularly from the surface.

One of the first birds I saw from the crest of the bank was a little brown Hooded Merganser, sitting low on the weedy surface. It was a Duck I had

never seen near by and had been watching for all summer, so I looked keenly at its flat, narrow, fisherman's bill, its knob-like suggestion of a crest, its upturned tail, and the light line along its side. Would that I could have seen an adult male with his spectacular black and white wheel crest! This one, as quiet as it was inconspicuous, failed to do anything notable, and soon passed out of sight. Was it merely a wanderer?

Another day, as I looked down, some Pied-bills and a close group of Shovellers were feeding below me. One of the Pied-bills, after diving came up right in the midst of the group of Shovellers, startling one so that it gave a quick jump back. The water weeds were so close below the surface here that the Ducks fed without tipping up, merely putting their heads under water.

Some stones on the shore were favorite resting places of the Canvasbacks and other large Ducks, which, sitting on them, looked very round and comfortable. One of the Canvasbacks on the water near by, all unconscious of observers, preened itself, scratched its ear with a webbed foot, and tossed up a swallow of water. The old females rode with matronly dignity, head held high, and bill often tilted up a little as if watching the bank above. A warning guttural note from a motherly old one who had come swimming up with a grown son, called my attention to the fact that I was being closely observed, and as I looked, the responsible parent flew, low over the water, away up around the bend beyond recognition. Her independent son, however, did not think it necessary to follow, and later, apparently went back to his brothers down the Coulee.

Twice I saw below me what must have been an Eared Grebe, either a young one or an adult in fall plumage. It sat solitary as they so often do, turning its head to look at me, its pointed crest and white throat reflected beneath it. When a young Coot came along, the exquisitely modelled throat of the Grebe made the poor heavily-built Coot suddenly fall in the scale of beauty. A black tug boat beside a white-rigged sail boat naturally suffers. But the tug boat nevertheless has its assured place in the world!

Standing on the crest of the bank with my back to the water, one day, I was conscious of some large bird flying away with a low grunting noise, and turning discovered a brown Bittern crossing the stream, evidently having risen from the tules on the edge of the water below me, for it let itself down into the marshy border of the opposite bank. Silent, mysterious birds, how the knowledge of their presence enriched the banks of the Coulee!

But this little river was not merely the resort of those living along its banks. Swallows were often seen flying over it and it was frequently visited by passing water fowl. Flocks of Ducks, Black Tern, and Snipe often whirled by, the Snipe with their perfect team work giving a charming flash of white. Late one afternoon a flock of thirty or forty Black Tern trooped in, black-headed adults and parti-colored young. Along the wire fence leading down into the lake arose a confusion of fluttering wings and tongues, the voluble young trying to get seated, talking in hoarse over-strained voices, as if they had been at it since early dawn—as they doubtless had. The flock was in constant motion. Sometimes a large band would sweep down and pass beyond on long gray wings, the young, retreating white spindles; then all would come trooping back, talking sociably as they came, skimming over the water like Swallows. The most skillful would dip down daintily in passing, while others—both old and young—would halt and light on the water a moment to pick up what, it would

seem, they were not quite Swallow-like enough to get on the wing. After flying back and forth over the surface for some time, the gray-winged flock took a turn in the sky; then suddenly, with one accord they swept down, fairly dropped down, to the water. When finally leaving they made a charming picture, the whole band of gray wings trooping up toward the sunpath.

While the Black Terns had been going through their evolutions, they had been watched by a group of Canvasbacks and other large Ducks which lay at ease on the water, phlegmatic Ducks to whom the performances of the nervous aeronauts must have been as edifying as the evolutions of aeroplanes to earth-bound multitudes. Besides the Terns, Franklin Gulls also flew down the Coulee —once, from high in the sky they swept down low over it—and one night on their way to the lake, a large mixed flock of Franklin Gulls and Black Terns made the sky over the pasture a moving picture of weaving wings. The next morning a flock of the Terns was beating low over a strip of plowed ground back of the Coulee, dropping down to pick up insects as they had over the water. Another time a party of Franklin Gulls was sitting near together, part of them bathing in the Coulee.

When sitting on the highest bench overlooking the big bend, one morning, I was idly watching the six or eight horse reapers and binders of the surrounding acres—one farmer was harvesting with three of the great machines, having borrowed one of a neighbor!—and before my eyes level-topped grain fields were changing to stubble fields dotted with sheaves of wheat, when suddenly a loud splash below brought me to my feet on the edge of the bank. In a line leading from the water to the bank, the tules shook and bent down—some one was coming! Peering down where the approaching bird or beast must show through the marsh grass, I discovered the striped nose of a large badger! As he started to climb up the hill I bethought me of the great hole in the grass at my feet, and in a moment more, up came the badger, swinging down his burrow like a flash, so near I could almost have touched him. Growling and sounds of digging then came up from the cavern. Was the hole being enlarged in view of the enemy on the rampart above? When the noise had stopped and I was leaving, I leaned over and peered down into the burrow again, and back in the shadow of the doorway saw dimly what seemed to be a large light-colored head —so it was a case of the watcher watched!

Two days later I heard a snarl from the badger below, but that was all. His cave had been well located, in a strip of prairie left between the wheat fields and the Coulee, a strip in which sagebrush and a patch of silver leaf made a last stand against the advance of civilization; and in which let us hope he might well be left undisturbed to carry on his good work of ridding the fields of destructive rodents.

Following this strip of prairie around a bend of the Coulee one day, I came upon a mound of soft earth a yard or more across, marked with foot-prints and having a hole so large that it proclaimed badgers. At the same time I began to hear queer animal noises, and the Redwings in the tules on the edge of the Coulee began fussing. Then the grass tops next the tules began to shake, and the shaking passed up a line toward me until at last I saw white-tipped hairs. By this time the noises from two approaching combatants were so angry and threatening, with snappy barks and snarls, that I stepped a little to one side. On their way toward me one of the belligerents caught sight of me and ran off in the grass, but the other one climbed up on a second mound and

raised his head like a dog, showing his broad striped face. On discovering me he apparently ran down his burrow, but angry mutterings plainly told that it took some time for these hardy antagonists to cool down. Woe be to the small ground squirrels they hunt!

A fourth badger was seen by the pasture fence. On a pile of soft brown earth the large brownish white animal was industriously digging. As if failing to find his quarry, he backed out and went trotting down the cow path, his short tail up like a bulldog. Going under the fence he turned into the weeds and then, discovering me, stood looking at me through his screen of weeds, his white nose stripe, flat ears, and white face marks showing well. When satisfied with his scrutiny he turned down a hole, growling as the others had. Numbers of large burrows in the neighborhood proved the industry of the badgers and the absence of ground squirrels attested the effectiveness of their labors.

The strip of prairie where I had found the Coulee badgers, extending along the east bank between the marshy edge of the water and the wheat fields of the terrace above, in late August made a golden band of prairie flowers. The sturdy yellow Grindelia with its gummy flower heads—beneficent cure for poison ivy—golden rod, the autumn flower of the east, and a wild sunflower that looked up the slopes facing the morning sun, dominated the wild garden strip, but a touch of purple was added to the gold in a magenta spike, the blazing star, whose flowers suggest the fragrant white spirals of ladies' tresses.

Following the bench north to its highest crest I looked up the sinuous line of the Coulee and out north-east a mile away to the second Coulee Bridge, whose black iron frame stood high above the meadows. But the best view was from my old lookout on Badger Crest. With a strong wind from the northwest, the Coulee made a beautiful water color. Down its narrowing westerly course, soft browns and wind ruffled dark purple patches were brightened by the vivid green of the marsh grass; while to the north, beyond the protected bend, still soft blues and browns led the eye along its widened shores. Open under the blue sky lay the Coulee, the prairie wind blowing over it, blowing till its tall marsh grass and its brown-topped tules bowed to the east, while the white-rumped Marsh Hawk hunted with hesitating flight up their borders.

(*To be continued*)

MALCOLM PLAYFAIR ANDERSON

By MELVILLE B. ANDERSON

WITH PORTRAIT

THE SUBJECT of this sketch, and the son of its author, was born at Irvington, a suburb of Indianapolis, April 6, 1879. His parents were both of school and college training, his father being at that time a professor at Butler College. From his twelfth to his fourteenth year Malcolm was at school in Germany, where he went with his mother, his elder brother, and the two younger children of the family. Here he learned little from books, but his contact with the German schoolboy was perhaps of some educative value. He and his brother found their survival among their German companions to depend in a degree upon force of arms and fists. Malcolm was a serious boy, not especially combative, but he soon learned not to fear a "German militarist" of twice his size. Within school his energy appears to have been employed largely in passive resistance to the admirably organized system of forcing a knowledge of Latin grammar upon the unwilling mind. Outside school his resistance to evil, if less passive, was perhaps equally passionate. He left Germany with some knowledge of the language and with no great love for the German schoolboy, who appeared to him to be both a bully and a talebearer.

Meanwhile his father had been called to the chair of English literature at Stanford University. Returning home, Malcolm came first under the tuition of Miss Irene Hardy, who did much to repair the devastation wrought by the German method upon his soul, which had been driven inward upon itself. Miss Hardy thought the case interesting, and found a way of drawing him out. Later on he studied under two teachers to whom he owed much, Mr. Frank Cramer and Mr. (now Professor) J. O. Snyder. In due time he naturally took the course (in Zoology) at Stanford University, where he received his degree in 1904.

From his fifteenth year on, he had been a member of several collecting expeditions, in which he early had the advantage of the companionship and example of such men as Ray Lyman Wilbur, Dane Coolidge, and W. W. Price. Before receiving his degree he had tramped thousands of miles, collecting and studying the flora and fauna of Arizona and California, and had gone to Alaska with Mr. Stone. He became a member of the Cooper Ornithological Club in 1901, and, though circumstances prevented him from devoting himself specially to Ornithology, he was to the last in correspondence with that Society. Dr. Grinnell informs me that Malcolm has to his credit the following titles:

"Birds of the Siskiyou Mountains, California: a Problem in Distribution" [with Joseph Grinnell] (Proc. Acad. Nat. Sci. Phila., January, 1903, pp. 4-15).

"A List of Birds from the Santa Cruz Mountains, California" [with Hubert O. Jenkins] (Condor, v, November, 1903, pp. 153-155).

That is of course a very slender showing, as he would have been the first to acknowledge had he considered the matter worth speaking of. I know that he keenly regretted his inability through lack of time to do more. But his notebooks prove him to have been a careful observer and an eager collector of birds. In 1904 he was chosen by the London Zoological Society to conduct the Duke of Bedford's Exploration of Eastern Asia. As he was under the immediate

direction of Mr. Oldfield Thomas, the eminent mammalogist, his principal attention as a collector could not be centered upon birds; yet even so, scarcely a day passed in the field when he failed to make some interesting observation. The following passage from his diary, written when he had already been in the Orient something less than three years, may indicate roughly the relative proportion of birds to mammals in the collections made by him, which are now to be found at the South Kensington Zoological Museum.

At the Bamboo Temple, near Che-Foo, Shantung Province, China, under date of April 5, 1907, he writes:

Fig. 25. Malcolm Playfair Anderson.

"This is the last day of my 28th year. What have I done since my last birthday? I have climbed Mt. Apo and made what collection I could there. I have visited Nikko. I have visited Saghalien and made the first real collection of mammals that has ever been taken from that island. I have worked in Hokkaido, adding much to my former work. Korea has been the scene of some

labor, and Tsushima, Iki, Goto, and finally this part of China have taken their share of my time. In all I have collected 668 specimens of mammals and 309 specimens of birds, a total of 977 specimens. Since leaving Mindanao I have met with uninterrupted success.'' During the whole time that he was in Mindanao he was ill, sometimes prostrated, with chills and fever; so that of the little he did there his notes contain little. In general his notebooks are kept with great care and, as he regarded himself not merely as a collector but as an explorer, contain much more than the ordinary field-notes of a naturalist.

If it be remembered that most of these collections were made in lands settled from very ancient time, where wild life is scarce and where hunting and trapping are pursued under a variety of inhibitions and obstacles, his record will be perceived to represent more industry, energy, pluck, and persistence than would be imagined by one who had not read the notebooks. Even in times of enforced idleness from collecting and observing, as when travelling, waiting for boats or permits or for his baggage, he tried to spend his time to the best advantage in walking about with his eyes open, questioning the people, photographing, etc. Here, for example, is the record of January 1, 1907, made at a little port on the Island of Tsu-shima, where the crew of the small craft on which he was voyaging, had landed to beguile twenty-four hours in drinking sake. After describing the outlook from a hill he had climbed with his Japanese hunter, he goes on:

''From our hilltop we wandered on down a trail singing and whistling, till we met a man on horseback and another on foot. The horseman dismounted and bowed, then passed on. The man on foot paused and addressed us. He was a funny old fellow with a bald head. Orii answered, told him our business, and asked him about animals. His answers were not very clear, as he had had too much sake. However we gathered that one of his neighbors had recently killed a wildcat, and the old man thought possibly it was still unskinned. We asked directions and were told to go to the next village and ask for his house (his name, he said, was 'Man of the Shining Head' and he was distinguished as the best drinker in his village). We found the owner of the cat (which was skinned). I bought the skin for two yen, and asked about the body. It had been given away. We went to the neighbor who had received it and found that he had eaten part of the cat and buried the head and vertebrae. To dig the thing up was the work of a moment, and we were in possession of scientific evidence of the presence of the wildcat on Tsu-shima.''

To give some idea of his method, I copy a few of his notes on birds, all taken from his diary of the two years, 1904-1906. His later notebooks, which I have not yet read, may contain observations of still greater interest. Here is a list of birds secured in Korea between August and December, 1905:

Brown-eared bulbul, blue flycatcher, Siberian tit, white eye, Japanese tit, green-finch, Iyngipicus, red-bellied woodpecker, slender-billed nuthatch, pigmy nuthatch, nightingale (warbler), owl, Quelpart shrike, gray robin-like thrush, robin, wren, jay, magpie, small yellowish brown-breasted finch, brown-headed shrike, skylark, large blue-grey shrike, Korean sparrow, long-billed sparrow (bunting?), black-throated sparrow, crossbill, purple finch, rosy-tinted tit, marsh tit, redstart, dipper, water-ousel, bullfinch, pipit, Iyngipicus sp. The following were only observed:

Crow, large hawk, small hawk, small kingfisher, white and black wagtail, pheasant, quail, swallow, creeper, large pigeon, Picus martius.

At Obu, Aichi-ken, Central Japan, January 9, 1905:

"Again my traps brought only the common mouse of the rice-fields. So I have decided to leave this place for Nara tomorrow. After noon we went out to take some photographs, and I made several exposures showing the infertile hills which characterize the place. They prove to be of conglomerate and sedimentary formation. When returning through the low bushes which cover the hills, a small bird flew up before me. This I shot and found to be new to my collection. In appearance it is much like a creeper, but has a shorter and stouter bill and lacks the stiff, pointed tail-feathers of that bird. The tail-feathers are marked with black bars. It seems to be a thrush. At first it flew up just before my feet. I watched the spot where it lit and followed. It did not move, for when I approached near I saw it upon the ground. I retreated to a good shooting distance, the bird watching me and moving only its head. The bushes among which I found this bird were low stunted pines and junipers, scarcely more than knee high."

On the hill of Mitake (about 2600 feet high), Kochi-ken, Shikoku, March 7, 1905:

"Last evening we shot on Mitake a bird new to my collection. It is probably a bullfinch. To-day we shot another of the same species, but marked with a beautiful rosy wash. It is probably a male, the less gayly colored one, a female. In this bird, the male, the head, wings and tail are black, back and scapulars grey, rump white, bill black. Cheeks rosy, this color extending over throat, but separated from bill by wide line of black. Breast and sides are grey, washed with rosy. Belly and under tail-coverts greyish-white."

There are hundreds of notes similar to the above; there is not space here for others. His later notebooks, especially those of his South American trips, should contain notes that would interest readers of THE CONDOR.

In 1908, returning from his long journeying in Asia, he went to Europe with his mother, and there, in the intervals of travel, he did a certain amount of work upon his own collections, which were regarded by Mr. Oldfield Thomas as of great value to science and, in some respects, the completest in the Museum. I regret that I cannot at this writing quote the exact words in which Mr. Thomas congratulated Malcolm most warmly upon the success of his expedition. In 1909-10 he again went to Asia in the same service, travelling extensively through China, in the desert to the north beyond the Great Wall, and in the mountains on the border of Thibet.

In later years he went twice to South America, the first trip being made in the company of Mr. Osgood of the Field Museum, the second in the company of the lady to whom he had been happily united in the summer of 1913. From the second trip he returned with health much impaired from the effects of fever, so that an out-of-door employment became imperative, making it for the time impossible for him to carry out the plans he had made for scientific study and writing. His notes appear to me to offer material which he might, to advantage, have worked up for publication. There is an interesting article by him in the Overland Monthly for April, 1914, entitled "Forty Days in Quelpart Island" (illustrated). Another illustrated article has been accepted, but not yet published, by the National Geographic Magazine, of Washington, D. C.

Last summer when the call went out for men to work in ship-yards, Malcolm responded to the call. His motive was every whit as patriotic as it would have been had he enlisted in the army, which he was precluded from doing. On

the 21st of February his life was ended by a fall from a scaffolding at Moore's Shipyard in Oakland.

It is not for me to make a public estimate of his character and achievements. He was a good man, greatly beloved, just, sincere, loyal, serene. I am permitted to quote the following words from a letter written by a scientific friend and colleague:

"His death is a loss not only to you, and to us, his friends, but to science. There are not many men with his ability and courage to go into hard places and do things worth doing, not in bravado, but simply in the course of his work. That quality we had all admired greatly in him, and we all had hoped that with leisure and quiet he would produce some literary work that would make his fame." I may add to this that fame, in the scientific or literary world, is something to which he would never have dreamed of aspiring; but that he has left a reputation among the many good judges who knew him for something better than fame,— for manly courage and honor united with delicacy of speech and feeling. He inherits the blessing upon the pure in heart.

Menlo Park, California, April 6, 1919.

DESCRIPTION OF AN INTERESTING NEW JUNCO FROM LOWER CALIFORNIA

By HARRY C. OBERHOLSER

IN the Biological Survey Collection in the United States National Museum there are four adult breeding specimens of a Junco that apparently is not referable to any described form. In view of this we think it should have a subspecific name of its own, although its range seems, like that of *Junco oreganus townsendi*, to be restricted to a single mountain range. This new race may therefore be known as:

Junco oreganus pontilis, subsp. nov.

Chars. Subsp.—Similar to *Junco oreganus townsendi*, but head and throat of a darker slate color, and back more rufescent.

Description.—Type, adult male, no. 196964, U. S. Nat. Mus., Biological Survey Coll.; El Rayo, Hanson Laguna Mountains, northern Lower California; June 4, 1905; E. W. Nelson and E. A. Goldman; original number, 11276. Pileum, sides of head and of neck, together with cervix, rather brownish dark mouse gray; back between sayal brown and buffy brown; scapulars and lower back, hair brown; rump between neutral gray and mouse gray; upper tail-coverts deep mouse gray; tail fuscous, the two outer pairs of rectrices white, the third pair with a long terminal white streak on the inner web next the shaft, also a little white on the basal outer web (only one side); wing-quills fuscous, narrowly edged externally with neutral gray; greater and median coverts, between chaetura drab and deep mouse gray, their outer edges hair brown; lesser coverts rather brownish neutral gray; chin and throat rather brownish dark mouse gray; breast, abdomen, and crissum, dull white; sides and flanks vinaceous buff; thighs fuscous; lining of wing pallid neutral gray, the centers of the feathers and the edge of the wing deep mouse gray.

Measurements.—Male (four specimens, from the Hanson Laguna Mountains, northern Lower California): wing, 76-80.5 (average, 77.3 mm.); tail, 66.5-71.5 (68.3); exposed culmen, 10.2-11 (10.8); tarsus, 20-21 (20.5); middle toe without claw, 13.3-15 (13.9).

Geographic Distribution.—Hanson Laguna Mountains, northern Lower California.

Remarks.—This new subspecies differs from *Junco oreganus thurberi* in its much less blackish head and throat, which, in the adult male, are slate color instead of black; much less extensively rufescent brown of the back; paler and less extensively buff (more pinkish) sides and flanks. It thus presents a very interesting combination of the characters of *Junco oreganus thurberi* and *Junco oreganus townsendi.* It has the very pale pinkish sides of *Junco oreganus townsendi,* but in the color of both head and back is almost exactly intermediate between these two races. This is further shown by its individual variation which, as in all forms of the Juncos, is considerable. In one specimen (no. 196962, U. S. Nat. Mus.) the head is blackish, approaching the color of the same part in *Junco oreganus thurberi,* though the throat is a little darker than in the other examples from the Hanson Laguna Mountains. The color of the back in two other individuals (nos. 196963 and 196965, U. S. Nat. Mus.) can be almost exactly matched in specimens of *Junco oreganus townsendi,* although the head and throat are seen to be more deeply colored. The birds from the Hanson Laguna Mountains are clearly intermediate between *Junco oreganus thurberi* and *Junco oreganus townsendi,* but present sufficient characters of their own, particularly in view of their isolated breeding range, to warrant their separation as a distinct subspecies.

The discovery of the intermediate character of these specimens from the Hanson Laguna Mountains is of considerable interest in view of the recent opinion of Dr. Jonathan Dwight (Bull. Amer. Mus. Nat. Hist., xxxviii, June 1, 1918, pp. 296-297) that *Junco townsendi* is a subspecies of *Junco mearnsi.* The study of these specimens and their relationships with the two contiguous forms shows clearly that *Junco oreganus pontilis* directly connects *Junco townsendi* with *Junco oreganus thurberi,* and that, therefore, the former must be a subspecies of the latter.

The present race is probably confined to the Hanson Laguna Mountains, since the birds from the San Jacinto Mountains appear to be typical of *Junco oreganus thurberi.*

In this connection it is of interest to recall the fact that many of the species and subspecies of the genus *Junco,* in addition to the one here described, occupy very restricted geographical areas during the breeding season. Conspicuous among these forms might be mentioned *Junco bairdi, Junco aikeni, Junco insularis, Junco vulcani, Junco oreganus townsendi,* and *Junco alticola fulvescens.*

Detailed measurements of the specimens of *Junco oreganus pontilis* are added below:

MEASUREMENTS OF SPECIMENS OF *JUNCO OREGANUS PONTILIS,* ALL TAKEN IN LOWER CALIFORNIA BY E. W. NELSON AND E. A. GOLDMAN

U. S. Nat. Mus. No.	Sex	Locality	Date	Wing	Tail	Exposed culmen	Tarsus	Middle toe without claw
196964	♂ (type)	El Rayo, Hanson Laguna Mts.	June 4, 1905	76.5	66.5	11	20	13.3
196962	♂	El Rayo, Hanson Laguna Mts.	June 4, 1905	76	66.5	10.8	21	15
196963	"♀" [♂]	El Rayo, Hanson Laguna Mts.	June 4, 1905	76	68.5	10.2	20.5	13.8
196965	♂	Hanson Laguna Mts., Hanson Laguna	June 5, 1905	80.5	71.5	11	20.5	13.3

Washington, D. C., March 8, 1919.

FROM FIELD AND STUDY

Nesting of the Wilson Snipe in California.—According to Grinnell, Bryant and Storer (*Game Birds of California*, p. 355), there is only one published record of the taking of the eggs of the Wilson or Jack Snipe (*Gallinago delicata*) in California. That record is of a set taken by A. Van Rossem for J. Mailliard near Tejon Pass, in the extreme northern part of Los Angeles County (J. Mailliard, CONDOR, XVI, 1914, p. 261). These authors say, however, that Belding (MS) states that the species breeds at Webber Lake, that Cooper was informed that it bred at Lake Tahoe, that George Neale reports two small young as found at Lake Tahoe early in August, 1912, also that three young were found in Sierra Valley, Plumas County, September 1, 1899, and that Bryant in the first week in June, 1914, saw Snipe in nuptial flight at Lower Klamath Lake. The Mailliard record is, therefore, the only one of eggs actually taken or even seen in California. In view of these facts it seems worth while to put on record my recent experience with this bird.

During June and July of 1918, I accompanied Dr. John Van Denburgh and Mr. Joseph R. Slevin on a collecting trip through northern California and southern Oregon. We traveled by automobile and were equipped for camping. Our collecting activities were confined primarily to reptiles, amphibians, and birds' nests and eggs.

On the night of June 1, we camped at the edge of Grasshopper Meadow which is in Lassen County, California. Dr. Van Denburgh has told (CONDOR, XXI, 1919, p. 39) of our finding the Western Willet nesting in this meadow. Soon after making camp, our attention was attracted by the noise made by a number of Jack Snipe in their nuptial flight. Although it was too dark to see the birds, the noise was characteristic and not to be mistaken. We had spread our blankets in the lee of a haystack in the edge of the marsh and the peculiar booming noise made by the Snipe could be heard very late in the night; indeed, I think I heard it throughout the night whenever I was awake. The next day while searching through the meadow, about twenty Jack Snipe were seen and heard flying about in broad circles high in air, as vividly described by Grinnell (*Game Birds*, p. 356). No nests, however, were found.

A few days later (June 7), we camped again at this meadow, where we again saw several Jack Snipe performing their interesting flight, as before. This time I was more successful and succeeded in finding two nests. The first contained one egg, the other three. I took the set of three, but left the one until the next day, hoping another might be laid before we left that camp. The next morning about eight o'clock the nest was visited again but it still contained only one egg, which I took, as we were leaving the locality that morning. This nest was found by flushing the bird when only a few feet distant. The bird circled about a few moments, then alighted on the top of a hay-press derrick near by, which was at least thirty feet high. Each of these nests was in a small clump of fine *Carex* growing in water perhaps six inches deep. The nests were simple structures composed of short pieces of *Carex*, some still greenish or not altogether dead. The nest material, although scanty, was sufficient to support the eggs above the water.

Two days later (June 9), while working a small wet meadow about three miles west of Alturas I found my third nest of the Jack Snipe. This nest contained three eggs and was in construction essentially like the other two, but it was in short grass on dry ground at the edge of a marsh.

All the eggs in these three sets were fresh. The single egg (measuring 1.48x1.14 inches), and the first set of three (1.44x1.12, 1.42x1.16, and 1.37x1.13 inches) are in the Museum of the California Academy of Sciences; the set taken near Alturas is in the collection of Dr. Van Denburgh.—BARTON WARREN EVERMANN, *Museum, California Academy of Sciences, San Francisco, California, February 5, 1919.*

Records of Larus heermanni with White Primary Coverts.—Mr. George Willett (CONDOR, XX, 1918, p. 127, fig. 21) has recently described and figured aberrant specimens of *Larus heermanni* having the primary coverts of each wing white. Mr. P. A. Taverner (CONDOR, XX, 1918, p. 187) has recorded like specimens from Alert Bay, British Columbia. The writer observed several such birds at Redondo, California, in 1911, and one at Pa-

cific Grove, on June 21, 1918. Each of these had a large squarish white blotch symmetrically located near the angle of each wing, in some cases more definitely and more extensively developed on the one side than on the other. It is probable that these variants are "sporadically recurring" mutants, as suggested by Mr. Taverner.—Carl L. Hubbs, *Field Museum of Natural History, Chicago, Illinois, January 23, 1919.*

An Albino Black-chinned Hummingbird.—Albino hummingbirds are of comparatively rare occurrence, and it seems, therefore, worth while to put on record an individual *Archilochus alexandri* of this character. It was taken at the ranch of Mr. Howard Lacey, on Turtle Creek, a few miles southwest of Kerrville, Texas, by Mr. Shirley Coppock, on July 20, 1913, and was presented to the Biological Survey collection, in which it is no. 241043, U. S. Nat. Mus. It is an adult female and is entirely pure white without a dark feather anywhere.—Harry C. Oberholser, *Washington, D. C., February 3, 1919.*

Relative Abundance of Ducks in the Rio Grande Valley.—An observer who hunts ducks regularly, in the same general locality, by the same general methods, ought to find in the record of his daily bag a very reliable indication of the relative abundance of the various species. The following is such a record, based on two years hunting in that part of the Rio Grande Valley within 50 miles of Albuquerque, New Mexico.

Species	Killed	Relative abundance on basis of 100	Relative abundance (corrected)
Mallard	77	43	40
Green-winged Teal	28	16	18
Pintail	20	11	12
Spoonbill	19	11	10
Baldpate	9	5	5
Mottled Duck (?)	9	5	5
Red-breasted Merganser	0	0	5
Blue-winged Teal	7	4	1
Gadwall	4	2	1
Canvasback	2	1	1
Redhead	2	1	1
Golden-eye	1	1	1
	178	100	100

In the third column I have made estimated allowances for certain extraneous factors. For instance: Mallards are reduced because they winter here, and hence are available for hunting during a longer period. Green-winged Teal are raised because they are mostly gone by November 5. Pintails are raised because only a very few winter. Spoonbills are reduced because they always occur in small flocks, and the number killed is for this reason relatively great as compared with the number seen. Their stupidity is about offset by the fact that when Mallards are abundant, they are not often shot at. Mottled Ducks pass southward early in the season and accordingly are not reduced, as was done with Mallards. Red-breasted Mergansers are not killed, but are common in winter,—their relative abundance is estimated. The remaining species are not common. The table does not include the Cinnamon Teal, since this is a spring but not a fall migrant here, and is not seen during the hunting season.

The hunting was done about equally over river, ponds, sloughs, and flooded fields, and about equally as pass shooting, jump shooting, and decoy shooting, so that the figures given should not be particularly affected by specific habits or habitat.

This table is offered as a suggested method, rather than as a final conclusion. Based on five years instead of two, it ought to be quite the most accurate possible method of determining relative abundance of species.—Aldo Leopold, *Albuquerque, New Mexico, February 1, 1919.*

The California Shrike Probably Mates for Life.—The recent article by Mr. F. C. Willard (Condor, xx, 1918, p. 167), suggesting the probability that many pairs of birds remain mated for life, has brought to light considerable information on this subject;

but, as most of the evidence submitted has concerned nesting pairs of birds, it may be of interest to record the following winter observations on one species.

Throughout the greater part of the San Joaquin Valley the California Shrike (*Lanius ludovicianus gambeli*) is a very abundant resident and, because of its habit of perching on telephone and telegraph wires while watching for prey, it is a rather conspicuous species at all times. Some idea of the abundance of this bird may be obtained from the statement that, in driving a distance of fifteen miles along the county roads, or even along the state highway, the count usually totaled from twenty to thirty birds.

Eighteen years of observation had convinced me that certain pairs of shrikes remained mated through the fall and winter months; but I had never given the matter any serious thought until the appearance of Mr. Willard's article, which greatly stimulated my interest. And, as I had occasion all through the last three months of the past year to make almost daily trips by automobile between many of the towns in Stanislaus and Merced counties, it soon became my regular practice to take a mental census of the Shrikes seen along the way. After making the count innumerable times I found that, with remarkably little variation, the average was one *pair* of birds seen for every five single individuals noted. In enumerating pairs I counted as such only birds seen perched close together or flying in company; the few doubtful cases were down as two single birds. To assume that each pair of Shrikes bring to maturity an average of five young each season would probably be getting very close to the actual figures. Is it not probable, then, that the larger figure in the ratio of five to one represents birds of the year which have never been mated, with, possibly, just an occasional adult which, through one agency or another, has been deprived of its mate?

The observations as outlined above have firmly convinced me that, once mated, the California Shrike spends the remainder of its life in company with the individual of its choice.—John G. Tyler, *Turlock, California, February 5, 1919.*

Another California Record of the Bendire Thrasher.—On May 7, 1916, I collected an adult male of the Bendire Thrasher (*Toxostoma bendirei*) near Victorville, Mohave Desert, California. The bird is now no. 1366, collection W. M. P. To quote Mr. Swarth: "The Bendire Thrasher is a most extraordinary take. From the date it would seem likely that it was a breeding bird, and it would be of great interest if you could actually find a nest of this species out there. As far as I can see, this specimen is precisely like others from Tucson, Arizona." I will say further that I have made many excursions to this locality, but after most careful search I have failed to discover any thrasher nesting there except the Leconte, and this species only rather locally.—Wright M. Pierce, *Claremont, California, February 8, 1919.*

Gray Gyrfalcon Taken in Oregon.—On November 17, 1916, while shooting ducks over a small seepage pond on the Hermiston, Oregon, irrigation project, Albert Humphrey of Pendleton, Oregon, shot a large hawk as it swooped down over the water to snatch up a dead Mallard that had just been shot. Knowing my interest in birds, Humphrey brought the bird to Pendleton; but as I was out of town at the time a friend skinned and salted the specimen for me. It proved to be a Gray Gyrfalcon (*Falco rusticolus rusticolus*). Some time later I made it up as a study skin. So far as I can learn this is the first record of the occurrence of the species in Oregon.—Stanley G. Jewett, *Pendleton, Oregon, February 11, 1919.*

Random Notes.—In January, 1919, Mr. Sefton brought me two females of *Mergus serrator.* I mounted one and made the other into a skin. On skinning the first one I could detect no "fishy" odor, so I sliced off the breast meat and had it cooked. It proved so savory that we cooked the other. They were equal in flavor to the average duck. The stomachs contained a mass of what appeared to be shredded grass.

The big flood of January, 1916, covered most of the salt marshes near San Diego and drowned most of the Little Black Rails (*Creciscus coturniculus*). I have not been able to find one since the flood.

January 30, 1919, a Marbled Godwit was brought to me for the Museum collection. On skinning it I found it was lame, with one hip considerably atrophied, so it may have been unable to go on further south.

In June, 1891, I heard the song of a Wilson Snipe at dusk over a marsh in Owens Valley. I have no doubt but that this species bred there.

The Long-billed Dowitchers have been common around the bays all winter. I saw several about the first of February.—Frank Stephens, *San Diego, California, February 12, 1919.*

A Supposed California-taken Trumpeter Swan.—Reference is made in the "Game Birds of California" (page 254) to a juvenile Trumpeter Swan from California in the British Museum, recorded by Count Salvadori in the "Catalogue of Birds" (vol. xxvii, p. 35). I examined this bird in November, 1908, at a time when the variations of size and points of difference between the Whistling and Trumpeter swans were fresh in my mind. Some four years before this date Mr. P. A. Taverner and I had begun a study of the swans. We had accumulated a large series of measurements, and Mr. Taverner had made many drawings to scale of the heads. This material was before me when I studied the series of swans in the British Museum. The bird itself is given in the "Catalogue of Birds" as "c. Juv. sk. California. J. Richards, Esq. [P.]."; and the number on the label is "57.10.9.2", indicating that the skin was registered on October 9, 1857. Who the donor, "J. Richards", was I have been unable to find out; no reference is made to him by Dr. Sharpe in his published account of the bird collection. The neck of the swan contains a newspaper dated San Francisco, December 8, 1856, so there is little doubt the bird is correctly assigned to California. The feathers of the head are gray, as are those of the back and flanks, the primaries and tail feathers; the axillars are whitish gray, the beak black with a faintly indicated spot that is reddish in the dried skin, but would be flesh color in life. The culmen is V-shaped, and the age of the bird is under a year; fixing the age is comparatively easy, but deciding as to the identity of the species is another matter.

A juvenile male swan taken on Lake St. Clair, on the Michigan side, March 27, 1908, and known as no. 61 in the series of measurements prepared by Mr. Taverner and myself, was found to match very closely the California bird in color, outline of beak, and age; the flesh-colored spot in front of the eye of no. 61 is surrounded by feathers, while in the California bird the feather line has receded sufficiently to leave the spot exposed. Fortunately the sternum with the trachea and bronchial tubes of no. 61 have been preserved and would alone identify it as a Whistling Swan; so there is little doubt that the California bird too, is of this species. Both birds belong to the straight-beaked type that approaches closely in the shape of the beak to the Trumpeter Swan and is often difficult to place without the sternum. Swans of the two species overlap in measurements in their first year. To illustrate this I give the measurements of three swans all under a year old, two the birds already discussed, the other a Trumpeter Swan taken at Leg Lake, Lincoln County, Washington, November 24, 1906.

Collection	Locality and Date	Age and Sex	Corner of eye to tip of bill	Corner of eye to rear of nostril	Rear of nostril to tip of bill	Culmen	Culmen line to loop of gape	Depth of bill	Length	Wing	Tail	Number of feathers in tail	Species
British Museum 57.10.9.2	California	juv.	4.8	2.78	2.02	3.1	1.37	1.75	(56.?)	21.5	5.1	20	*Cygnus sp.*
Series 61	St. Clair Flats, Michigan, March 27, 1908	♂ juv.	4.62	2.5	2.12	3.2	1.1	1.75	50.75	20.4	6.5	20	*Cygnus columbianus*
Coll. J. H. F. No. 12407	Leg Lake, Lincoln County, Washington, November 24, 1906	juv.	4.9	2.8	2.1	3.5	1.3	1.85	———	20.2	5.3	20	*Cygnus buccinator*

—J. H. Fleming, *Toronto, Ontario, Canada, March 15, 1919.*

Bubo virginianus subarcticus in North Dakota.—Authentic published records of *Bubo virginianus subarcticus* in North Dakota are not numerous. Although this subspecies is reported as nesting within the State, all such examples prove to be pale examples of *Bubo virginianus occidentalis*, since, of course, the latter is the breeding form of North Dakota. The Arctic Horned Owl, however, does occur with apparent regularity as a winter resident, and the writer has examined several specimens from this State. Among these the following seem worthy of mention: Hebron, North Dakota, December 2, 1917, collected by S. A. Rahtz; Robinson, North Dakota, March 7, 1918, George H. Mayer; and Grand Forks, North Dakota, a specimen without date in the Museum of the University of North Dakota.—Harry C. Oberholser, *Washington, D. C., February 3, 1919.*

The Caracara in California.—I notice that according to Grinnell's *Distributional List of California Birds* some doubt exists regarding the occurrence of the Caracara within the state. I can say with positive certainty that one individual Caracara (*Polyborus cheriway*) lived for some time in the vicinity of Monterey during the winter of 1916. To be more exact, the month of February of that year witnessed one of the most severe storms in the history of the state, with southerly and southeasterly gales prevailing for several days. Upon their subsidence one of the wardens of the Pacific Improvement Company reported a strange bird in the vicinity of Seal Rocks. Mr. W. W. Curtner, a student at the Hopkin's Seaside Laboratory, made an investigation and pronounced the visitor to be a Caracara. The next day both of us journeyed by machine to the spot, made careful observations, took color notes and later examined museum specimens, all of which proved to our entire satisfaction that the bird in question was a female Caracara that probably had been swept before the wind from its southern home.

If we attempted to approach on foot the bird invariably took flight when we were at least an eighth of a mile away, and with alternate flapping of wings and soarings would skim over the level land situated between the sea and forest to alight in some distant tree. On the other hand, when we remained in the machine we had little difficulty in approaching to less than one hundred feet. Without displaying any particular interest in us the bird would strip bits of bark from its perch, flip them into the air, or would stand erect on its relatively long legs, stretch its wings, preen its feathers and finally vault into the air for another journey along the coast. It remained in the neighborhood of Seal Rocks for two weeks or so, and then, during a brief period of unusually bright weather, disappeared.—Harold Heath, *Stanford University, California, March 19, 1919.*

The Fly-catching Habit Among Birds.—How extensive is the fly-catching habit among American birds other than members of the family Tyrannidae? The observation of this habit by the writer among members of different families of our land birds prompts the question. During the summer and fall of 1915 while engaged in field work in the Yosemite National Park and vicinity I specifically saw the following species flycatching. California Woodpecker (a common habit, frequently observed elsewhere); Clarke Nutcracker (several seen on various dates in late July flying out as much as 100 yards or more from the tops of tamarack pines at the side of a high mountain meadow); Western Lark Sparrow (one seen flycatching at dusk one evening early in June, at the edge of a meadow in the pine forest east of Coulterville); Audubon Warbler (a common habit, frequently observed elsewhere); Ruby-crowned Kinglet (once seen so engaged); Townsend Solitaire, Alaska Hermit Thrush, Western Robin, and Western and Mountain bluebirds. Thus all members of the thrush family except the Russet-backed and Northern Varied thrushes have been seen flycatching; the habit is a regular one with both bluebirds and seems not uncommon in the case of the Solitaire.—Tracy I. Storer, *Berkeley, February 7, 1919.*

Arctic Tern from Laguna Beach, California.—As there seem to be but few published records of the Arctic Tern (*Sterna paradisaea*) for southern California, it probably will be of interest to record the capture of a bird of this species that I have in my collection, a female taken at Laguna Beach, Orange County, California, on May 1, 1915, by H. G. White. The above specimen (no. 864, coll. W. M. P.) has been identified by Dr. Grinnell.—Wright M. Pierce, *Claremont, California, February 8, 1919.*

Large Set of Eggs of the Canada Goose.—While on a collecting trip through northern California and southern Oregon in June and July, 1918, Summer Lake, Oregon, was visited June 21. Out in the lake about a quarter of a mile from the west shore is a small, low island, perhaps 300 feet long, 50 feet wide, rock at one end, sandy in most places, and with a maximum height above the water of only six or seven feet. There being no boat available, we decided to wade out to the island, if possible, through the alkali water and the very soft and very foul-smelling mud. Fortunately the water was only about three feet deep at its worst and the mud was at its worst where the water was at its best, albeit both were very, very bad everywhere and all the time.

We found the little island taken over almost or quite entirely by a colony of 150 to 200 pairs of California Gulls and the nesting season was at its height. The nests were thickly placed among the small lava rocks and more scatteringly over the sandy area. Many of the nests contained young of various sizes, from those just hatched to lusty youngsters that scrambled away and into the water at our near approach. Many nests contained eggs, usually two or three in number, and in all stages of incubation excepting that stage which the oologist regards as most satisfactory.

Two or three Caspian Terns were seen as we approached the islet but no nest was found. The only nest not a Gull's that we found was one of a Canada Goose. It was between two considerable chunks of lava on the end of the islet where the Gulls were least numerous. The eggs were *10 in number; and stale!* Evidently the old Goose (and a *real goose* she was, to build in a place like that!) had selected the site, built the nest, and laid her eggs; then the Gulls came. And when 300 to 400 noisy, pestiferous gulls go to house-keeping (such as it is) in your small back yard, it is time to vacate. At least so thought old Mrs. *Branta canadensis.* In the language of the street, "she beat it"; for which she has my sincere thanks, else I would not now possess the biggest set of Canada Goose eggs ever, if we may believe the records. The usual set is much fewer. Samuels says "about six"; Ridgway (Birds of Illinois), four to seven; Baird, Brewer, and Ridgway, five or six, rarely nine; Coues's Key, five to nine, usually five or six; Mrs. Bailey, six to [or] seven; and Grinnell, Bryant, and Storer, five to seven.

One of my oological friends suggests that two different birds laid in the same nest, an explanation which I utterly reject, because I can not believe there were *four* geese that were "such a goose" as to attempt to raise a family under such surroundings.

The measurements of these ten eggs in inches are as follows: 3.43x2.26; 3.33x2.35; 3.35x2.30; 3.48x2.36; 3.45x2.38; 3.40x2.45; 3.25x2.27; 3.41x2.28; 3.40x2.25; and 3.25x 2.25. Except for a few slight stains they are all beautiful specimens; but the blowin' of them was no joke!—Barton Warren Evermann, *Museum, California Academy of Sciences, San Francisco, February 10, 1919.*

The Whistling Swan in Arizona.—About the middle of last December, there appeared on Howard Lake, a few miles from Williams, Arizona, a flock of eleven swans. Howard Lake is more of a mud pond than anything else, and in a very dry season there would be very little, if any, water there, I imagine. However, there has been plenty of water the last few years, so much so that perch were planted and I understand they have grown and increased.

Two of these swans were killed, one mounted and the other saved as a skin, and are still at Williams, where I saw the mounted one last week. I sent the measurements and particulars to my friend Ruthven Deane, and he confirms what I was practically sure of, that it is the Whistling Swan (*Olor columbianus*).

Is not this occurrence in Arizona, a rare one? It seems to me these birds must have been away off of their course.—W. B. Mershon, *Saginaw, Michigan, March 22, 1919.*

Some Notes from San Diego County, California.—Whistling Swan (*Olor columbianus*). Though Stephens, in his "List of Birds of San Diego County" (Trans. San Diego Soc. Nat. Hist., vol. 3, no. 2, February 15, 1919), page 8, records the Whistling Swan as a rare winter visitant, I have seen no definite published records for that county. The following, therefore, may be of interest. In late December, 1917, O. W. Howard noted a flock of about thirty swans on lakes at Warner Springs, San Diego County. In November, 1918, while on a visit to this locality with Mr. Howard, I received from Mr. H. C. Gordon, of San Diego, considerable information on the birds of the region. Mr. Gordon

has resided in San Diego County for many years past, and regularly spends a portion of each winter hunting at Warner Springs. He stated that the Whistling Swan is a regular winter visitant to that section, though less plentiful than formerly. In a letter written from Warner Springs, December 21, 1918, Mr. Gordon states further: "A flock of over seventy-five swans came in a few days ago. All left in a day or two except six, two old birds and four cygnets."

Wood Duck (*Aix sponsa*). On November 29, 1918, while at Warner Springs, Mr. Gordon showed me the head and breast of a male Wood Duck that was killed a few days previous to this date. The hunter who killed it was not aware of its identity, a fact easily understood when its infrequent occurrence in the region is considered.

American Merganser (*Mergus americanus*). In the parlor of the Warner Springs Hotel is a mounted specimen of a drake American Merganser which, Mr. Gordon states, was killed in that locality three or four years since.—G. Willett, *Los Angeles, California, April 2, 1919.*

A Recent Record of Mycteria americana in the San Joaquin Valley.—So far as I have been able to learn, the Wood Ibis has been ascribed to the San Joaquin Valley principally upon the statement of Dr. J. G. Cooper (*Auk*, iv, 1887, p. 90) to the effect that it had formerly occurred in this region. There seemed little reason to doubt that the species still occurred sparingly, and occasional unfamiliar birds seen in flight, but not positively identified, further strengthened this belief.

I am now able to report that only recently I have had the pleasure of examining a mounted specimen of this bird, taken by Mr. Adrey E. Borell at his home four miles west of Fresno, on July 28, 1918. This Ibis, in company with two others, was seen flying over his home and was collected when the trio alighted in a tall eucalyptus tree. The bird was a female and evidently not fully adult, as a number of bluish feathers appear in certain parts of the plumage.—John G. Tyler, *Turlock, California, March 8, 1919.*

California Gulls Eat Earthworms.—Although late in the spring, gulls have many times been seen towering above the University campus at Berkeley, ostensibly to gain sufficient height to cross the hills towards their breeding grounds in the interior somewhere, no opportunity to determine the species so as to add it to the campus list of birds has presented itself until this past winter. On December 8, 1918, a gull seen feeding on the parade grounds was positively identified as a California Gull. The appearance of gulls in the same place was reported several times during January. On February 9, 1919, two gulls of this species were seen in the same place. At first they seemed to be picking up pebbles; but when watched closely they appeared to spy some item of food and running quickly to it, to swallow it whole. Closer investigation showed that they were feeding upon earthworms which had been drawn to the surface by a recent rain. On retrospection it was remembered that the bird seen in December was feeding similarly just after a rain.—Harold C. Bryant, *Berkeley, California, April 2, 1919.*

Miscellaneous Stomach Examinations.—The following bird stomachs were examined by Dr. H. C. Bryant. The results seem worthy of note.

No. 1. *Buteo lineatus elegans*, Red-bellied Hawk, taken near Corona, California, on February 27, 1916. The stomach contained: parts 5 Jerusalem crickets, *Stenopelmatus* sp.; 5 beetles, *Citones californicus?*; 1 beetle, Chrysomelidae.

No. 2. *Buteo lineatus elegans*, Red-bellied Hawk, taken near Corona, California, on February 27, 1916. Stomach contained one Pocket Gopher, *Thomomys bottae pallescens.*

No. 3. *Asio wilsonianus*, Long-eared Owl, taken February 27, 1916, near Corona, California. Stomach contained bones and hair of one Meadow Mouse, *Microtus californicus.*

No. 4. *Archibuteo ferrugineus*, Ferruginous Rough-leg, taken February 22, 1916, near Corona, Riverside County, California. The nearly empty stomach contained parts of one Skink, *Eumeces skiltonianus.* I have collected several of these hawks in the last few years and it is interesting to note that in nearly every instance the stomach was empty.—Wright M. Pierce, *Claremont, California, March 12, 1919.*

Aechmophorus occidentalis in Lower California in Summer.—There is apparently no certain breeding record for *Aechmophorus occidentalis* south of the United States, and in fact its nesting in the extreme southwestern corner of this country is largely inferential. It is known to spend the summer at Tulare Lake, and also in suitable places near San Diego, California, but there is no instance of the actual finding of the nest in either of these localities. In this connection it may be of interest to record two specimens of this species collected by Mr. L. J. Goldman of the Biological Survey in June, 1915, at Volcano Lake, northeastern Lower California. These are now, respectively, no. 259881, U. S. Nat. Mus., taken June 9, 1915, and no. 259882, U. S. Nat. Mus., taken June 10, 1915. Mr. Goldman reports that this species was common from May 1 to June 11 (when he left the region) in the delta of the Colorado River. He says that they moved principally in pairs, but he was unsuccessful in finding a nest.—Harry C. Oberholser, *Washington, D. C., February 3, 1919.*

Sea Parrots Washed up on Beach at Eureka.—One male *Fratercula corniculata*, and six *Lunda cirrhata* were taken February 16, 1919; also another lot on February 23, 1919, one male and one female *Fratercula corniculata* and twelve *Lunda cirrhata.* All were found dead on the beach and all were in winter plumage. Evidently a violent storm at sea had caused this fatality among the Puffins.—Franklin J. Smith, *Eureka, California, February 26, 1919.*

Notes on the Weights and Plumages of Ducks in New Mexico.—During the shooting seasons of 1917 and 1918 the writer kept a record of weights and peculiarities of plumage of ducks killed in the Rio Grande Valley near Albuquerque. The weight records, plotted as seasonal curves for each species, show tentatively some interesting facts.

The curves for all species are flat for the period from October 16 to November 1. The curves for all species show an increase in weight from November 1 to November 15. After November 15 the curves are subject to sudden drops, and during the winter period to very gradual drops. The sudden drops appear to be coincident with severe general storms. The gradual winter drop seems obviously due to cold weather and scarcer feed.

Weight curves for Mallards were drawn separately for hens and drakes. The curves for the two sexes are parallel, and show an apparently constant difference of a little more than one-half of a pound.

The sudden drops in the Mallard curves (assumed to be due to general storms) coincide interestingly with certain variations in plumage. When the season opens, on October 16, Mallard drakes, while easily recognizable, have the rusty heads, brown breast-spots, blackish wash on the under parts, and undeveloped curly feathers above the tail, all of which indicate immaturity. By November 15 practically full adult plumage is attained. But when the first cold storm has passed, *drakes of immature plumage and much lesser weight again appear.* Apparently the storm drives out most of the southern-raised, early-hatched, full-plumaged birds and replaces them with northern-raised late hatched birds of decidedly immature plumage. These late-flight birds are of lesser weight, not only because of immaturity, but probably also by reason of their long trip from the north. It is noticeable that these cold-wave Mallards are not so wary as the early November birds. Drakes with some indications of immature plumage are occasionally found even among the winter-resident ducks in January.

One often hears sportsmen boasting about four-pound ducks. I have yet to see one. The fall ducks here are all very fat, but the heaviest duck I have killed was a 3¼ lb. Mallard drake taken November 15, 1918. Individual drakes at any one time will vary ¾ lb. in weight. The lightest drake taken was one weighing 2 lbs., December 1, 1918. The average weight in November, when they are fat, is 2⅝ lbs.

Mallard hens weigh from 1¾ lbs. to 2¾ lbs. The average is 2⅛ lbs.

Pintails vary from early hens at 1¼ lbs. to late drakes at 2⅛ lbs. The average is 1⅝lbs.

Black Mallards (Mottled Duck?) vary from 2½ lbs. to 3 lbs.

Baldpates vary from 1¼ lbs. to 1¾ lbs.

Redheads vary from 1½ lbs. to 1⅞ lbs.; Canvasbacks from 1⅞ lbs. to 2⅛ lbs. Very few of these are killed here.

Gadwalls (scarce) weigh around 1⅞ lbs.

Spoonbills vary from 1 lb. to 1½ lbs.

Green-winged Teal early in the season weigh ¾ lbs. The few stragglers that winter here drop to ⅝ lbs.

None of these figures include cripples, since these are often abnormally emaciated.—Aldo Leopold, *Secretary New Mexico Game Protective Association, Albuquerque, New Mexico, February 1, 1919.*

The Summer Tanager in California.—On March 10 of this year I took a specimen of the Summer Tanager (*Piranga rubra*) in the Arroyo Seco between Los Angeles and Pasadena, California. The specimen was submitted to the members of the Southern Division of the Cooper Club and was also critically examined by Messrs. Grinnell and Swarth of the California Museum of Vertebrate Zoology. All agree upon the specific identity of the bird, although Grinnell and Swarth find slight divergences from the typical subspecies, *P. r. rubra*, and suggest that an extralimital race may be represented. It is not *P. r. cooperi.* The specimen, an immature male, has been deposited in the California Museum of Vertebrate Zoology, where the writer considers that all state records should be preserved.

The bird was quite shy and could not be approached within range. Only through repetition of the call note was it secured. Evidence of its having been in captivity is lacking and the wariness would point to its being an untamed bird, though the possibility must be conceded.

It may interest those collectors who think lightly of the collecting pistol as not sufficiently business-like, to know that this specimen and one other state record (Louisiana Water-thrush) would not have been secured except for such an arm.—Loye Miller, *State Normal School, Los Angeles, California, April 10, 1919.*

EDITORIAL NOTES AND NEWS

The Cooper Club membership roster appearing in this issue of The Condor shows that the Club is now made up of 6 Honorary members and 585 Active members. We are indebted to Mr. J. Eugene Law for compiling this annual roster, as has been the case now for several years passed. Corrections or changes should continue to be reported to Mr. Law, whose address is now the Museum of Vertebrate Zoology, University of California, Berkeley, he having recently joined the staff of that institution as Curator in Osteology.

The many friends of Major Allan Brooks will rejoice in his recent safe return home after nearly five years service, with the Canadian army in France, almost from the very start of the war. One can imagine his delight to be once again among the forests and mountains of his own land, British Columbia. Accomplished as artist, accurate as observer, and skillful as collector, Brooks does highest credit to the science of ornithology and to the organizations to which he belongs, which promote this science.

Believing that a better knowledge of wild life will bring about better conservation of it, and that when people are on their summer vacations they are most responsive to appeal on this score, the California Fish and Game Commission backed by the Nature Study League will institute this coming summer a series of lectures and nature study field trips designed to stimulate interest in the proper conservation of natural resources. The Tahoe region has been selected for the work this year and lectures and field trips which will be open to the public without charge will be offered at six different resorts during the month of July. Illustrated lectures by Dr. H. C. Bryant on the game birds, song birds, mammals, and fishes will furnish evening entertainment, and early morning trips afield will give vacationists an introduction to mountain wild life. The motto of these classes will be: "Learn to read a roadside as one reads a book." Special excursions for children will be conducted.

The Organization Meeting of the American Society of Mammalogists was held in the New National Museum, Washington, D. C., April 3 and 4, 1919, with a charter membership of over two hundred and fifty. The following officers were elected: C. Hart Merriam, President; E. W. Nelson, First Vice-President; Wilfred H. Osgood, Second Vice-President; H. H. Lane, Recording Secretary; Hartley H. T. Jackson, Corresponding Secretary; Walter P. Taylor, Treasurer. The Councilors are: Glover M. Allen, R. M. Anderson, J. Grinnell, M. W. Lyon, W. D. Matthew, John C. Merriam, Gerrit S. Miller, Jr., T. S. Palmer, Edward A. Preble, Witmer Stone, and N. Hollister, Editor. The policy of the Society will be to devote its attention to the study of mammals in a broad way, including life histories, habits, evolution, palaeontology, relations to plants and animals, anatomy, and other phases. Publication of the Journal of Mammalogy, in which popular as well as technical matter will be presented, will start this year. Anyone who qualifies for membership before the next annual meeting will be considered a charter member.

Addition to Military Service Record: SIMMONS, George F., Second Lieutenant, Sanitary Corps, Adjutant, Base Hospital no. 130, Camp Shelby, Miss. Discharged December 18, 1918. Mr. Simmons is now resuming his ornithological studies at the University of Texas.

The Summer Session of the University of California at Berkeley will be held this year from June 30 to August 9. Two courses of special interest to students of birds will be given, one on "The Birds of California" and the other pertaining to "Economic Vertebrate Zoology"; both to be conducted by Associate Professor J. Grinnell and based on the collections and equipment of the Museum of Vertebrate Zoology.

Merrill W. Blain died at his home in Los Angeles on December 26, 1918. He was born at Oceanview, California, April 24, 1894, and received his early education in San Francisco. At the time of his death Blain was a third-year student in the Detroit College of Medicine and Surgery. He was an enthusiastic ornithologist and was a member of the Cooper Ornithological Club, the Wilson Ornithological Club and the American Ornithologists' Union. He had a well cared for collection of the birds and eggs of southern California. Blain had returned to California in the hopes of regaining his health and was for some months in a sanitarium, but he continued to fail. He was buried in southern California amid the hills and flowers he loved so well.

The Business Managers' report for the year 1918 has been presented to the two Divisions of the Cooper Ornithological Club by Messrs. Law and Chambers. Some of the more important features of their statement are as follows: In 1918, CONDOR fund receipts amounted to $1258.46, Avifauna receipts, $105.73; January 1, 1918, there was in bank $8.68. Total available funds for 1918, $1372.87. Expenditures, from CONDOR fund (which includes administrative expenses of the Club), $1173.06, from Avifauna fund, $9.31, a total of $1182.37. Balance in bank, January 1, 1919, $190.50. Deducting from this balance dues and subscriptions already received for 1919 and subsequent years ($127.10), and there is left $63.40, which represents the net balance on hand with all debts paid.

There were printed 1100 copies of each issue of volume 20 (1918) of THE CONDOR. The printing of this volume, with 226 pages, cost $920.36, as compared with $892.55 for volume 18 (1916), with 250 pages. Receipts during 1918 were the least of any year since 1913, but careful retrenchment kept disbursements at a lower figure than for any year since 1912,—this despite the fact that the cost per page of printing THE CONDOR is greater than ever before.

In last year's report the business managers ventured the prediction that January 1, 1919, might see the Club entirely solvent. Happily, this has been realized, and, for the first time in the twenty years of THE CONDOR'S existence, the old year makes a small contribution to the new. The Club began 1919 with an actual cash surplus of $63.40, and all debts paid.

The publication of Avifauna 13, the Second Ten Year Index to THE CONDOR, has been undertaken, and will again throw the Club in debt. The earlier numbers of the Avifauna series were published, and the cost successfully met, at a time when each new issue only increased an already excessive deficit, a condition requiring much optimism on the part of the business managers and a great deal of patience on the part of the Club's creditors. Now, with no deficit and with an established demand for the Club's publications, it is reasonable to assume that the sale of Avifauna 13, together with earlier numbers, will all but pay the cost of publication. But there is much more material available for production in this series, no less than four numbers being now in course of preparation, some with the manuscript well toward completion. The production of these papers presents a problem to be met during the coming year. The Business Managers invite suggestions as to

how this situation may best be handled to the interests of the Club at large.

Department of Ornithology and Mammalogy of the Museum of the California Academy of Sciences.—The Museum of the California Academy of Sciences has recently acquired by gift the entire ornithological and oological collection of John W. and Joseph Mailliard. The collection is devoted exclusively to North American birds. There are about 11000 skins representing 777 species. The oological collection contains more than 13000 specimens, in 5240 sets representing more than 600 species.

This is one of the largest and best selected collections in western America, and contains numerous specimens of species that are now rare or that possess unusual interest because of locality or other important fact. The collection represents the joint work of the Mailliard brothers during their many years of field work and study of American birds. The collection is especially valuable because of the unusually full and carefully kept records that accompany the specimens.

The water birds have already been installed in the Academy Museum; the land birds and the nests and eggs will remain at the residence of Mr. John W. Mailliard for the present, until adequate facilities for properly housing them are provided at the Museum.

With the transfer of ownership of the collection to the Academy of Sciences, and at the urgent request of the Council of the Academy, Mr. Joseph Mailliard consented to accept the Honorary Curatorship of Ornithology in the Museum. Having retired from active business, Mr. Mailliard is able to give practically his entire time to curatorial work in the Department, to field work for enlarging the collection where insufficiently represented, and in research work.

The Academy has also secured the services of Mr. Luther Little, formerly of Los Angeles, as Assistant Curator of Ornithology and Mammalogy. Mr. Little is a member of the Southern Division of the Cooper Club, has had considerable experience as a collector and student of birds and mammals, and is regarded by the Academy as a decided acquisition to its Museum staff.—B. W. E.

PUBLICATIONS REVIEWED

The Animal Life of Glacier National Park.—The animal life of our national parks is one of their best recreative assets. The cliffs, the lakes, the waterfalls, and the forests each and together tend to stimulate the senses and the mind to pleasurable excitement; and the efforts to secure these pleasures in full measure bring vigorous bodily exercise. But the animals, provided interest in them is once aroused, undoubtedly constitute a more subtle and even more alluring objective, one that brings into play at keenest pitch those more or less latent senses and instincts which were of vital importance in the earlier stages of human history. For, among mammals, large and small, and among birds and insects, one encounters the moving, elusive objective, the one characterized by mannerism, by changing form, color tone and pattern, and by sound of great variety. Moreover, the animal life, and the plant life too, presents innumerable problems of interrelations, of interdependences and of struggles for mastery—the contemplation of any one of which will provide unlimited stimulus for intellectual activity and enjoyment.

Despite our belief in the instinctive human appeal of all these things, the average human of today must be re-introduced, as it were, to this field of appreciation. A valuable service in this regard depends for performance upon those persons and agencies possessing the naturalist's knowledge and possessing also the power to make this available to the people at large. People must be instructed at least to that most desirable point where each will pursue eagerly and independently his own study of natural history. A splendid move has been made on the part of our National Park Service in the direction of realizing upon this special value of national parks by the inaugurating of a series of papers setting forth the more attractive features of their wild life.

The first separate publication of the Department of the Interior dealing solely with the animal life of any one national park is the one just published and entitled "Wild Animals of Glacier National Park."[1] Happily enough, the account of "The Mammals" is provided by Vernon Bailey, and that of "The Birds" by Florence Merriam Bailey; for each of these authors is exceptionally qualified to handle his subject both by reason of adequate field experience throughout the west generally as well as within the area dealt with in particular, and by reason of skill to put his knowledge into comprehensible language and to develop an enthusiastic

[1]Department of the Interior, National Park Service (Washington, Gov't Printing Office), 1918; 210 pp., 37 pls., 94 text figs. Our copy received March 6, 1919. Price 50 cents.

thirst for further knowledge of the subject in the mind of the reader.

Abundant illustrations add immeasurably to the attractiveness and usefulness of this contribution. An exceptionally valuable feature is the large-scale colored life-zone map of Glacier Park. This zone map, resulting from Mr. Bailey's own field work, not only furnishes the owner of this brochure with a ready geographic index to the region, but in connection with the text, it provides him with the means of locating himself definitely as regards the belt of animal and plant life in which he may find himself at any point or along any route.

The accounts of the birds consist chiefly of facts concerning the manner of occurrence of the species in Glacier Park, together with life-history notes to an extent that the necessary limits of space permit. Particularly full accounts are given, in Mrs. Bailey's vivid style, of the White-tailed Ptarmigan, Barrow Golden-eye, Harlequin Duck, and Water Ouzel.

The Baileys are to be congratulated upon their opportunity to inaugurate what must become an increasingly important function of the National Park Service, namely to make known to a large and receptive class of people the wild life resources of national parks. And the National Park Service is to be congratulated upon the good fortune in securing such experienced naturalists to initiate their efforts in getting value out of this asset.—J. GRINNELL.

AN ANNOTATED LIST OF THE BIRDS OF SAN DIEGO COUNTY, CALIFORNIA, by FRANK STEPHENS. Transactions San Diego Society of Natural History, vol. 3, no. 2, pp. 142-180. Issued February 15, 1919.

The most striking feature of the present list is its conciseness. It is our belief that this paper will prove of more than ordinary value to the layman. For one thing, the typography of the paper is such that one is enabled to turn to any desired species with a minimum of eye strain and effort, and there is a well-executed index.

The 320 species treated are listed under orders and families in the familiar A. O. U. order. Points such as general habitat, food and economic status are concisely treated under each order heading, while under each species there is a brief but excellent account covering such points as relative numbers, local habitat, breeding, and, in the rarer species, a record of the capture of specimens.

Mr. Stephens' many years of observation in California, equalled by few if any ornithologists now living, make his comments on the present and former abundance of certain birds of especial value. His opinion regarding the economic status of various species, based on years of experience also as a rancher, is to be held in high esteem by those who are familiar with the conservative and impartial judgment of the man.—J. DIXON.

BIRDS OF THE KANSAS CITY REGION. By HARRY HARRIS. Transactions of the Academy of Science of St. Louis, vol. XXIII, no. 8, pp. 213-371, 4 text figs. (maps). Issued February 27, 1919.

In this paper we find a regional list of unusual merit. While we are not at all familiar with the ornithology of the Kansas City region, we are inclined to have the utmost confidence in the accuracy of the facts given, on the basis of the thoroughness of the workmanship shown in other respects. The arrangement is excellent; the bibliography is full, and the comments offered on the titles are illuminative; and the index is unusually complete.

The paper is much more than a list, as the annotations relating to manner of occurrence, habits, etc., of a single species often amount to half a page. The total number of species admitted is 343, though 8 of these are now extinct in the region. A notable feature is the detailed explanation of the distribution of the three subspecies of Red-winged Blackbird, two of which breed in Kansas and a third appears in migration, and through the winter as well, sometimes in company with the others.

All in all, Mr. Harris has planned and put through a thoroughly creditable piece of work, and one which must mark a far advance in the development of Kansas ornithology.—J. GRINNELL.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

FEBRUARY.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology at 8 P. M., February 20, 1919. President Evermann was in the chair, and the members present were Messrs. Bryant, Carriger, Cohen, Cooper, Grinnell, Hall, Hansen, Hunt, Lastreto, Law, Mailliard, Moffitt, Storer, Swarth, Wheeler, Wright; Mesdames Allen, Bamford, Grinnell, Knappen, Law, Newhall, Roe, Schlesinger and

Wythe. The visitors present were Mr. Cox, Mr. Lincoln, Miss Adams and Mrs. Swarth.

The minutes of the January meeting were read and approved, and the January minutes of the Southern Division were read. Professor Ivan Hall, Mr. John O'Connell and Mr. Walter Sellner were elected to membership and the names of R. J. Middleton and C. I. Rawson, elected by the Southern Division, were approved. New names presented were those of Miss Mary E. McLellan, Berkeley, by Dr. Evermann, and Mr. Richard Cox, Oakland, by H. E. Hansen, together with twelve names presented to the Southern Division at its January meeting.

On recommendation of the Executive Committee of the two Divisions, Messrs. Chambers and Law were re-elected Business Managers of the Club, and Dr. Joseph Grinnell, Editor, and Mr. H. S. Swarth, Associate Editor, of THE CONDOR.

Mr. Wheeler reported continuation of activity on the part of the committee which had been appointed to conduct investigations relative to the licensing of cats. The Business Managers' report, presented by Mr. Law, revealed a gratifying condition of solvency on the part of the Club. The Affiliation Committee of the Pacific Division of the A. A. A. S. reported with regard to the meeting to be held at Pasadena, and the following committee was instructed to prepare a program for that occasion: Mrs. Allen, Mr. Mailliard and Dr. Grinnell.

Mr. Hunt then presented a paper on Methods of Representing Bird Songs. Adjourned.—AMELIA S. ALLEN, *Secretary.*

MARCH.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology at 8 P. M., March 20, 1919. President Evermann was in the chair, and the other members present were: Messrs. Bryant, Carriger, Cooper, Dixon, Grinnell, Hall, Lamb, Kibbe, Lastreto, Palmer, Storer, Swarth, Wheeler and White; Mesdames Allen, Gifford, Field, Grinnell and Kibbe. The guests present were Mr. and Mrs. Gifford, Mrs. Evermann, Mrs. Swarth and Mrs. Wheeler.

The minutes of the February meeting were read and approved. Miss Mary E. McLellan and Mr. R. Cox were elected to membership, as were also twelve others whose names had been proposed to the Southern Division at its January meeting. New names presented were those of Mr. F. N. Bassett, Alameda, by Mr. H. C. Bryant, and Mrs. Flora C. Hayes, Berkeley, by Miss Margaret W. Wythe.

A letter from Mr. Harold Heath recording the presence of a Caracara at Monterey was read by Dr. Grinnell. Mr. Kibbe reported on the status of the cat in six different places in the United States where ordinances have been adopted with reference to the keeping of cats. On motion of Mr. Wheeler, seconded by Mr. Lastreto, it was voted that a resident of Berkeley, equipped with a model ordinance, be appointed to take up the question of the licensing of cats with the city council. Mr. Kibbe was duly appointed.

Mr. E. W. Gifford then gave the program of the evening, his subject being "The Birds of Ancient Egypt". This was illustrated by lantern slides showing drawings taken from the ancient monuments and from modern paintings of Egyptian birds.

The death of Mr. Malcolm P. Anderson was announced, and Messrs. Grinnell, Dixon and Lamb were appointed to draw up appropriate resolutions of condolence. Adjourned. —AMELIA S. ALLEN, *Secretary.*

SOUTHERN DIVISION

JANUARY.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at the office of Mr. Howard Robertson, Los Angeles, the evening of January 30, 1919. President Miller was in the chair, while Mr. Chambers was appointed Secretary pro tem. Other members present were: Messrs. Bishop, Colburn, Daggett, Dawson, Hanaford, Reis, Rich, Robertson, and Stivers. J. H. Taylor was a visitor.

Messrs. R. J. Middleton and C. I. Rawson were elected to membership. New names presented were: Selwyn Rich, Claremont, Gordon Nicholson, Ontario, and Leonard Krehbiel, Upland, by Wright M. Pierce; Thomas E. Thompson, Los Angeles, by C. O. Esterly; A. Russell Smith, North Glendale, Penn., by Wharton Huber; Herbert L. Thowless, Newark, N. J., by B. S. Bowdish; Zulenia Parcell, Los Angeles, by Loye H. Miller; William Griffee, Norton, Kan., by Guy Love; Wallace Ashley Deane, Washington, D. C., by T. S. Palmer; Jesse H. Taylor, Eagle Rock, Harry Edgar Wheeler, Conway, Ark., and Charles Alfred Gianini, Poland, N. Y., by W. Lee Chambers. There were also presented three names from the Northern Division.

Dr. Miller submitted the following resolution on the death of Olive Thorne Miller, which was ordered spread upon the minutes:

"Whereas, in the death of Olive Thorne

Miller, the Cooper Ornithological Club has lost one of its valued and distinguished members, one who has not only added to the sum of our knowledge of birds, but who has labored long and well in the dissemination of that knowledge and in the stimulus of a wider interest in birds, especially on the part of young people; be it therefore

"Resolved, that this society spread upon its minutes, and publish in its bulletin, this expression of its respect and appreciation, and this acknowledgement of the great loss that has befallen the science of ornithology, in the passing of Olive Thorne Miller."

An invitation to participate in the 1919 meeting of the Pacific Division of the American Association for the Advancement of Science, was read. The following nominations for officers for the current year were made: President, L. H. Miller; Vice-president, George Willett and Howard Robertson; Secretary, L. E. Wyman. Mr. Robertson was appointed a committee of one to draw up resolutions on the death of Durno I. Shepardson, which occurred early in January.

In the general discussion that followed, several members reported the Western Golden-crowned Kinglet at and near sea-level, in various localities in southern California, as Long Beach, Santa Barbara, Los Angeles and Eagle Rock. Mr. Dawson told of the progress being made on the "Birds of California", reporting that in all probability the manuscript will be completed by September of this year, while the technical work is about half done. He spoke enthusiastically also on the Museum of Comparative Oology, and of original work he is attempting in connection with that institution, presenting the subject in a very convincing way.

Mr. Robertson then invited the members to inspect a large relief map of southern California, said to be the finest of its kind in existence. He called special attention to that part of the country traversed by the Los Angeles Aqueduct system, and its zoological conditions and possibilities. Adjourned. —W. Lee Chambers, *Secretary, pro tem.*

February.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at the Museum of History, Science and Art on the evening of February 27, 1919, with President Miller in the chair and other members present as follows: Messrs. Appleton, Bishop, Brouse, Brown, Chambers, Hanaford, Higgins, Howell, Little, Reis, Rich, Willett and Wyman.

On motion by Dr. Rich the Secretary was instructed to cast an electing ballot for the applicants whose names were presented at the January meeting. New names presented were: Clyde Field, San Diego, by F. Stephens; Ernest K. Schleichert, Washington, D. C., by W. Lee Chambers; Chreswell John Hunt, Chicago, Ill., by Benjamin T. Gault; Napier Smith, Montreal, Quebec, by L. McI. Terrill; Ira N. Gabrielson, Corvallis, Oregon, by Stanley Jewett; and Dr. H. C. Henderson, Carpinteria, by Miss Charlotte Bowditch. Election of officers was then in order. Mr. Willett, on account of his anticipated long absence, withdrew as nominee for Vice-president, and on proper motion the Secretary was instructed to cast electing ballots for Dr. L. H. Miller, Howard Robertson, and L. E. Wyman, as President, Vice-president and Secretary, respectively, for the ensuing year.

A letter from the Secretary of the Northern Division, relative to the action of the Southern Division in voting to establish a club library, and indicating opposition to this action, was read; on motion by Mr. Willett a reconsideration was postponed to a later meeting. A letter from Mr. E. W. Nelson, to Mr. Howell, asking whether the Migratory Bird Law is being properly observed in this section, was presented to the members. Violations were reported common in Imperial Valley, but otherwise the law seems to be generally observed.

The matter of a fungus growth on eggs in cabinets was brought before the members in a letter from Mr. F. H. Kennard. Dr. Bishop stated that his collection has been seriously affected and that he has found no efficient remedy against the pest, which apparently has not reached the Pacific Coast.

Mr. Willett moved that the Secretary be instructed to acknowledge to Mrs. D. I. Shepardson the donation of Mr. Shepardson's collection of nests and eggs. The motion was seconded by Dr. Rich and carried. Mr. Chambers read and explained the annual report of the Business Managers of The Condor, which showed a remarkably flattering condition of finances. On motion by Mr. Willett, seconded by Mr. Reis, a vote of thanks was extended to Messrs. Law and Chambers for their generous and efficient work in behalf of the Club.

During an hour of general discussion Mr. Willett related conditions in the Sacramento Valley, chiefly as affecting game birds. Apparently geese are decreasing materially. He learned of only one specimen of the Tule Goose having been taken during the past season in that locality. Egrets seem every-

where more common and are apparently increasing. Dr. Bishop read some interesting notes from Carmel and Santa Barbara, and Mr. Howell told of recent experiences in the San Gabriel Mountains, at Camp Baldy. Adjourned.—L. E. Wyman, *Secretary.*

March.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at the Museum of History, Science and Art on the evening of March 27, 1919. The business meeting was preceded by an exhibition of lantern slides, made by the autochrome method by Mr. Donald R. Dickey, whose remarkable skill in the handling of difficult subjects and a difficult method was greatly appreciated. The audience consisted of members, their families and friends, to the number of forty or more.

Minutes of the February meeting were read and approved. On motion by Mr. Law, seconded by Mr. Chambers, the Secretary was instructed to cast an electing ballot for the applicants whose names were presented at the previous meeting. New names submitted were: Donald C. Meadows, Orange, by Wright M. Pierce; H. O. Parks, Willcox, Ariz., by A. P. Smith; Nephi Reynolds, Salt Lake City, Utah, and G. Raymond Walker, Murry, Utah, by A. O. Treganza; John Alden Shepard, Salt Lake City, Utah, by Mrs. A. O. Treganza; also three names from the Northern Division.

The matter of participation in the coming meeting of the Pacific Division of the American Association for the Advancement of Science was again brought before the members. On motion by Mr. Law, seconded by Mr. Willett, it was expressed as the sense of the meeting that the Cooper Club should cooperate with the Western Society of Naturalists in representation at these meetings.

Dr. Esterly moved that this Division concur with the Northern Division in the matter of a depository for Cooper Club property in the shape of notebooks and manuscripts, in that these should properly be placed in care of the business managers. Motion seconded by Willett and carried.

A letter from Miss Mary Mann Miller, expressing appreciation of the resolution on the death of her mother, Olive Thorne Miller, was read. Adjourned.—L. E. Wyman, *Secretary.*

INTER-MOUNTAIN CHAPTER

January.—After a long period of enforced inactivity, the Inter-Mountain Chapter of the Cooper Ornithological Club held a business meeting on January 8, 1919, at which time new officers were elected as follows: President, John Sugden; Vice-president, A. D. Boyle; Secretary and Treasurer, Mrs. A. O. Treganza. The evening was spent in a general discussion of bird legislation. After its first inception, in 1912, the Utah Audubon Society lay dormant. A meeting was called January 2, 1919, at which time officers were elected. Most of the trustees, officers and members being Cooper Club members, it was voted to hold the meetings of the Utah Audubon Society in conjunction with the Cooper Club. Adjourned.—Mrs. A. O. Treganza, *Secretary.*

February.—The Inter-Mountain Chapter of the Cooper Ornithological Club met February 12, 1919, in the reading room of the Deseret Gymnasium. Eight members and nine visitors were in attendance. President Sugden presided. Dr. D. Moore Lindsay gave a most interesting talk upon the birds of the English and Irish coasts and of Greenland. Roosevelt, the naturalist, was depicted by A. O. Treganza. After the program, the business of the meeting was taken up. Adjourned.—Mrs. A. O. Treganza, *Secretary.*

March.—The Inter-Mountain Chapter of the Cooper Ornithological Club met March 12, 1919, at 8 p. m., in the reading room of the Deseret Gymnasium. Prof. J. H. Paul presided. Nine members and two visitors were in attendance. Nephi Reynolds and Mr. and Mrs. J. A. Shepard were new members welcomed into the club. Prof. J. H. Paul gave a splendid talk on "Bird Neighbors", also exhibiting many skins of local birds. A review of Beebe's book, "The Bird", was begun by Ashby D. Boyle. Adjournment left this topic to be continued at next meeting. Adjourned.—Mrs. A. O. Treganza, *Secretary.*

DIRECTORY OF MEMBERS OF THE COOPER ORNITHOLOGICAL CLUB

Revised to May 1, 1919

Residence in California unless otherwise stated. Year following address indicates date of election; year in parenthesis indicates date honorary member joined the Club. Star preceding name indicates life member.

HONORARY MEMBERS

Allen, Dr. J. A., Amer. Museum Nat. Hist., New York, N. Y. 1910.

Henshaw, H. W., Biol. Survey, Washington, D. C. 1909.

Merriam, Dr. C. Hart, 1919 16th St., Washington, D. C. 1909.
Nelson, E. W., Biol. Survey, Washington, D. C. (1904) 1917.
Ridgway, Robert, 3306 New Hampshire Ave., N. W., Washington, D. C. 1905.
Stephens, Frank, 3746 Park Blvd., San Diego. (1894) 1912.

ACTIVE MEMBERS

Alexander, Miss Annie M., Suisun. 1908.
Alexander, E. Gordon, 1603 South St., Lexington, Mo. 1918.
Allen, Dr. A. A., McGraw Hall, Ithaca, N. Y. 1911.
Allen, Mrs. Amelia S., 37 Mosswood Road, Berkeley. 1913.
Anderson, Ernest M., 2524 Asquith St., Victoria, B. C., Canada. 1915.
Anderson, Dr. Rudolph M., Biol. Div., Geol. Survey, Ottawa, Ont., Canada. 1916.
Appleton, J. S., Simi, Ventura Co. 1901.
Armstrong, Edward E., 2249 Calumet Ave., Chicago, Ill. 1914.
Arnold, E., Grand Trunk Ry., Montreal, Que., Canada. 1909.
Arnold, Dr. Ralph, 825 Union Oil Bldg., Los Angeles. 1893.
Arnold, Dr. W. W., 504 N. Nevada Ave., Colorado Springs, Colo. 1911.
Arthur, Stanley Clisby, Dept. of Conservation, New Orleans, La. 1918.
Atkinson, W. L., 35 Hawthorne Way, San Jose. 1901.
Atsatt, Miss Sarah R., 345 S. Serrano Ave., Los Angeles. 1911.
Badé, Wm. F., 2616 College Ave., Berkeley. 1903.
Badger, M. C., Santa Paula. 1915.
Bailey, Alfred M., Louisiana State Museum, New Orleans, La. 1917.
Bailey, Bernard, R.D. 1, Box 97, Elk River, Minn. 1911.
Bailey, Florence M. (Mrs. Vernon), 1834 Kalorama Road, Washington, D. C. 1910.
Bailey, H. H., 319 54th St., Newport News, Va. 1903.
Bailey, Vernon, 1834 Kalorama Road, Washington, D. C. 1904.
Bales, Dr. B. R., 149 W. Main St., Circleville, Ohio. 1906.
Ballard, Maria V., 2320 W. Pacific Ave., Spokane, Wash. 1919.
Bamford, Mrs. G. L., 1428 Castro St., Oakland. 1918.
Bangs, Outram, Museum Comp. Zool., Cambridge, Mass. 1906.
Barker, Fred, Parkers Prairie, Minn. 1914.
Barnes, Claude T., 359 10th Ave., Salt Lake City, Utah. 1915.
Barnes, R. Magoon, Lacon, Ill. 1908.
Barrows, Prof. Walter B., Box 1047, East Lansing, Mich. 1909.
Batchelder, Chas. F., 7 Kirkland St., Cambridge, Mass. 1910.
Beck, Rollo H., R.D. 21, San Jose. 1894.
Bennett, R. H., 246 Southern Pacific Bldg., San Francisco. 1909.
Bent, A. C., Taunton, Mass. 1909.
Benton, Thos. H., Jr., 2821 Van Buren St., Alameda. 1916.
Bergtold, Dr. W. H., 910 Metropolitan Bldg., Denver, Colo. 1917.
Bicknell, Mrs. F. T., 319 S. Normandie Ave., Los Angeles. 1913.
Bigelow, Homer L., Old Orchard Road, Chestnut Hill, Mass. 1910.
Billings, Miss Edna B., Harrington, Wash. 1918.
Bishop, Dr. Louis B., 365 Orange St., New Haven, Conn. 1904.
Blain, Merrill W., 727 Jefferson Ave., Detroit, Mich. 1909.
Blake, Mrs. Edwin T., 2843 Steiner St., San Francisco. 1917.
Blayney, Nita A., 920 O St., Fresno. 1911.
Bliss, John D., Pozo, San Luis Obispo Co. 1916.
Boeck, Wm. C., East Hall, Univ. Cal., Berkeley. 1917.
Boeing, W. E., 1100 Hoge Bldg., Seattle, Wash. 1914.
Bolander, L. Ph., Jr., 1947 E. 28th St., Oakland. 1907.
Bolt, B. F., 1421 Prospect Ave., Kansas City, Mo. 1916.
Borell, Adrey E., R.D. 11, Box 31, Fresno. 1918.
Bowdish, B. S., Demarest, N. J. 1910.
Bowditch, Miss Charlotte, 2227 Upper Garden St., Santa Barbara. 1914.
Bowles, J. H., The Woodstock, Tacoma, Wash. 1903.
Boyle, Ashby D., 380 E St., Salt Lake City, Utah. 1915.
*Bradbury, W. C., 1440 Race St., Denver, Colo. 1913.
Braislin, Dr. William C., 425 Clinton Ave., Brooklyn, N. Y. 1910.
Brandt, H. W., 2025 E. 88th St., Cleveland, Ohio. 1914.
Brewster, Wm., 145 Brattle St., Cambridge, Mass. 1904.
Bridges, Mrs. Harriette W., 2628 Benvenue Ave., Berkeley. 1918.
Brooks, Major Allan, Okanagan Landing, B. C., Canada. 1906.
Brooks, L., Box 539, New Bedford, Mass. 1913.

Brouse, W. A., 3623 5th Ave., Los Angeles. 1916.
Brown, D. E., 2542 Beacon Ave., Seattle, Wash. 1909.
Brown, Edward J., 1609 S. Van Ness Ave., Los Angeles. 1915.
Brown, G. Franklin, Needham, Mass. 1918.
Brown, Mrs. Herbert, 434 E. 2d St., Tucson, Ariz. 1914.
Bryant, Dr. Harold C., Museum Vert. Zool., Berkeley. 1910.
Burleigh, Thos. D., 825 N. Negley Ave., Pittsburg, Pa. 1918.
Burnett, W. L., State Agr. Coll., Fort Collins, Colo. 1910.
Burnham, Dr. Clark, Bushnell Place, Berkeley. 1907.
Burns, Frank L., Berwyn, Pa. 1909.
Burtch, Verdi, Branchport, N. Y. 1910.
Buturlin, Sergius A., Wesenberg, Esthonia, Russia. 1909.
Caduc, E. E., 512 Massachusetts Ave., Boston, Mass. 1911.
Calder, James A., Buena Park. 1917.
Camp, Chas. L., Livingston Hall, Columbia Univ., New York, N. Y. 1909.
Cantwell, George G., Puyallup, Wash. 1915.
Carpenter, N. K., Box 127, Escondido. 1901.
Carriger, H. W., 5185 Trask Ave., Oakland. 1895.
Case, Rev. Bert F., Tolland, Conn. 1913.
Case, C. M., 306 Blue Hills Ave., Hartford, Conn. 1911.
Chamberlain, C. W., 36 Lincoln St., Boston, Mass. 1912.
Chambers, W. Lee, Eagle Rock. 1897.
Chapman, Frank M., Amer. Museum Nat. Hist., New York, N. Y. 1903.
*Childs, John Lewis, Floral Park, N. Y. 1904.
Clark, Josiah H., 238 Broadway, Patterson, N. J. 1910.
Clay, C. Irvin, Box 353, Eureka. 1910.
Clifton, H. T., 509 E. Walnut St., Pasadena. 1904.
Coale, Henry K., Highland Park, Ill. 1907.
Coggins, Herbert L., 2929 Piedmont Ave., Berkeley. 1910.
Cohen, Donald A., 2618 Lincoln St., Alameda. 1901.
*Colburn, A. E., 806 S. Broadway, Los Angeles. 1905.
Cole, Mrs. A. H., 2827 Hillegass Ave., Berkeley. 1917.
Cooke, Miss M. T., 1328 12th St., Washington, D. C. 1918.
Cookman, Alfred, 1340 Exposition Blvd., Los Angeles. 1912.
Cooper, J. S., 827 54th St., Oakland. 1903.
Cox, H. E., care C. H. Reed Co., San Luis Obispo. 1916.
Crane, Ada Ethel, 19 Ross St., San Rafael. 1914.
Craven, Jesse T., 811 Roosevelt Ave., Detroit, Mich. 1909.
Crosby, Maunsell S., Grasmere Farms, Rhinebeck, N. Y. 1911.
Culver, Susan B., 2423 Prospect St., Berkeley. 1914.
Cummings, Byron, Univ. Ariz., Tucson, Ariz. 1916.
Currier, Ed. S., 416 E. Chicago St., St. Johns Sta., Portland, Ore. 1904.
Daggett, Frank S., Museum Hist., Sci., and Art, Los Angeles. 1895.
Davenport, Mrs. Elizabeth B., Northern Ave., Brattleboro, Vt. 1911.
Davidson, Pirie, East Hall, Univ. Cal., Berkeley. 1916.
Davis, Benjamin J., 2525 Piedmont Ave., Berkeley. 1916.
Davis, Dr. Fred B., 401 Vernon St., Oakland. 1916.
Davis, J. M., 811 O St., Eureka. 1908.
*Dawson, W. Leon, R.D. 3, Box 83, Santa Barbara. 1906.
Day, Chester S., 1711 Commonwealth Ave., Boston, Mass. 1910.
Dean, W. F., Three Rivers. 1901.
Deane, Ruthven, 112 W. Adams St., Chicago, Ill. 1904.
Deane, Wallace A., 1266 Columbia Road, Washington, D. C. 1919.
Deane, Walter, 29 Brewster St., Cambridge, Mass. 1907.
Dear, Lionell S., Box 456, Ft. William, Ont., Canada. 1914.
Dearborn, Ned, Linden, Md. 1909.
DeGroat, Dudley S., Box 231, Redwood City. 1916.
De Ribcowsky, D., 811 Story Bldg., Los Angeles. 1919.
Dice, Dr. Lee R., Dept. Zool., Univ. Ill., Urbana, Ill. 1914.
*Dickey, Donald R., San Rafael Heights, Pasadena. 1910.
Dickinson, A. B., 1510 Girard St., Los Angeles. 1916.
Dillaway, H. L., 3418 Snohomish Ave., Everett, Wash. 1919.
Dille, F. M., Valentine, Neb. 1903.
Dixon, Joseph, Museum Vert. Zool., Berkeley. 1904.
Dodge, Laura I., 3031 Eliot St., Long Beach. 1915.
Dodge, Ralph E., 546 Bay St., Santa Cruz. 1915.
Drachman, Myra, 3031 Eliot St., Long Beach. 1915.

DuBois, Alexander Dawes, 327 S. Glenwood Ave., Springfield, Ill. 1911.
Duprey, H. F., Dixon. 1907.
Durfee, Owen, Box 125, Fall River, Mass. 1911.
Dutcher, William, 949 Park Ave., Plainfield, N. J. 1905.
Dwight, Dr. Jonathan, Jr., 134 W. 71st St., New York, N. Y. 1904.
Eastman, Capt. F. B., Box 653, Fort Leavenworth, Kan. 1904.
Eaton, S. Harrison, Box 653, Lawrenceville, Ill. 1916.
Edson, J. M., Marietta Road, Bellingham, Wash. 1911.
Edwards, H. Arden, Box 312, Claremont. 1913.
Eggleston, Prof. Julius W., 239 William St., New London, Conn. 1913.
Enoch, V. A., 2700 Darwin Ave., Los Angeles. 1918.
Enoch, Wade L., 2700 Darwin Ave., Los Angeles. 1915.
Esterly, Dr. C. O., Occidental College, Los Angeles. 1908.
Evans, Frank C., Crawfordsville, Ind. 1918.
Evans, J. Harold, R.D. 5, Box 236, Santa Rosa. 1917.
Evermann, Dr. Barton W., Cal. Acad. Sciences, San Francisco. 1911.
Falger, Annie M. (Mrs. Wm.), Modesto. 1917.
Fargo, Mrs. Minerva J., 1632 N. Kingsley Drive, Los Angeles. 1914.
Felton, Mrs. C. N., Menlo Park. 1916.
Ferguson, Elizabeth, 1 Mosswood Road, Berkeley. 1918.
Ferguson, Mrs. Mary Van E., 1 Mosswood Road, Berkeley. 1915.
Field, Mrs. Chas. A., 534 27th St., Oakland. 1916.
Field, Clyde, 1859 Julian Ave., San Diego. 1919.
Field, Dr. George W., Biol. Surv., Washington, D. C. 1918.
Finley, Wm. L., 651 E. Madison St., Portland, Ore. 1900.
Fish, Mrs. Frances Webster, 2325 Piedmont Ave., Berkeley. 1917.
Fischer, E. J., 525 W. 57th St., Los Angeles. 1910.
Fisher, Dr. A. K., Biol. Survey, Washington, D. C. 1904.
Fisher, Miss Elizabeth W., 2222 Spruce St., Philadelphia, Pa. 1910.
Fisher, Walter K., Stanford Marine Laboratory, Pacific Grove. 1900.
Fitzpatrick, T. J., Bethany, Neb. 1913.
Flanagan, John H., 89 Power St., Providence, R. I. 1904.
Fleming, J. H., 267 Rusholme Road, Toronto, Ont., Canada. 1910.
Flint, Wm. R., 244 N. Madison Ave., Pasadena. 1912.
Forbush, E. H., State House, Boston, Mass. 1916.
Forrest, Earle R., 261 Locust Ave., Washington, Pa. 1910.
Fortiner, John C., Brawley. 1910.
Fowler, Frederick H., 221 Kingsley Ave., Palo Alto. 1901.
French, James G., The Menagerie, Maywood, Victoria, B. C., Canada. 1918.
Fuertes, Louis A., 201 Wyckoff Ave., Ithaca, N. Y. 1904.
Furber, John J., Klamath Falls, Ore. 1918.
Gabrielson, Ira N., Corvallis, Ore. 1919.
Gartrell, Geo. N., Summerland, B. C., Canada. 1917.
Gault, Benj. T., Glen Ellyn, Ill. 1905.
Gay, Harold S., 200 S. Wilson Ave., Alhambra. 1901.
Germain, Miss Claire, 3906 W. 1st St., Los Angeles. 1915.
Gianini, Chas. A., Poland, N. Y. 1919.
Gifford, Dr. Harold, 567 Brandeis Bldg., Omaha, Neb. 1916.
Giles, Roscoe I., 82 Newton St., Marlborough, Mass. 1917.
Gilman, M. French, Banning. 1901.
Goelitz, Walter A., 1622 Judson Ave., Ravinia, Ill. 1915.
Goethe, C. M., Capital Natl. Bank Bldg., Sacramento. 1915.
Goldman, E. A., Biol. Survey, Washington, D. C. 1901.
Goldman, Luther J., Pendleton, Idaho. 1902.
Goodcell, Mrs. Marion L., 864 D St., San Bernardino. 1914.
Gormley, A. L., Box 80, Arnprior, Ont., Canada. 1918.
Gosse, Capt. Philip, Savile Club, 107 Piccadilly W., London, England. 1917.
Gould, Joseph E., Box 126, Arcadia, Fla. 1909.
Grant, U. S., 4th, Harvard Club, 27 W. 44th St., New York, N. Y. 1909.
Granville, Fred L., 2238 Canyon Drive, Hollywood. 1910.
Greenwood, Frederick, Fed'l Res. Bank, Spokane, Wash. 1918.
Grey, Henry, R.D. 2, Box 154A, San Diego. 1901.
Griffee, Bill, Norton, Kan. 1919.
Griffin, Eva F., 3864 Brighton Ave., Oakland. 1918.
Grinnell, Geo. Bird, 238 E. 15th St., New York, N. Y. 1914.
Grinnell, Hilda Wood, 2811 College Ave., Berkeley. 1912.

Grinnell, Dr. Joseph, Museum Vert. Zool., Berkeley. 1894.
Guion, Geo. Seth, Napoleonville, La. 1911.
Gunn, Miss Amy E., 2828 Devisadero St., San Francisco. 1914.
Guthrie, Miss Esther, Woodland. 1918.
Hadeler, E. W., Painesville, Ohio. 1918.
Hall, Mrs. Carlotta C., 1615 La Loma Ave., Berkeley. 1915.
Hall, Ivan C., 5 Eton Court, Berkeley. 1919.
Halladay, Daniel S., R.D. 3, Box 201, Anaheim. 1910.
Hanaford, A. W., R.D. 9, Box 700, Los Angeles. 1917.
Hanford, Forrest, 3825 Division St., Oakland. 1912.
Hann, H. H., Parkdale, Ore. 1909.
Hanna, W. C., 1000 Pennsylvania Ave., Colton. 1902.
Hansen, Harold E., 870 43d Ave., San Francisco. 1916.
Harmon, Mrs. Frances M., 2115 Estrella Ave., Los Angeles. 1912.
Harris, Harry, Post Office, Kansas City, Mo. 1914.
Hart, Fred B., 530 Chetwood St., Oakland. 1918.
Hartman, Paul J., 1118½ Maple Ave., Los Angeles. 1917.
Hathaway, H. S., Box 1466, Providence, R. I. 1912.
Havemeyer, Henry O., 129 Front St., New York, N. Y. 1917.
Head, Anna, 2533 Chilton Ave., Berkeley. 1912.
Heineman, Oluf J., 1664 Grove St., San Francisco. 1908.
Heller, Edmund, Amer. Museum Nat. Hist., New York, N. Y. 1894.
Helme, Arthur H., Miller Place, Suffolk Co., N. Y. 1911.
Henderson, Dr. H. C., Casitas Road, Carpinteria. 1919.
Henderson, Junius, 627 Pine St., Boulder, Colo. 1909.
Henderson, Walter C., Biol. Survey, Washington, D. C. 1918.
Henshaw, Judge F. W., 762 Mills Bldg., San Francisco. 1915.
Hersey, F. Seymour, 6 Maple Ave., Taunton, Mass. 1915.
Hersey, L. J., Wray, Colo. 1909.
Higgins, Elmer, 17 Bonita Ave., Long Beach. 1919.
Hill, Willard, Star Route, Wasco, Kern Co. 1918.
Hoag, Mrs. G. B., Elko, Nev. 1916.
Holbert, Miss Lillian, 908 Jennings Ave., Fort Worth, Texas. 1918.
Holland, Harold M., Galesburg, Ill. 1901.
Holman, F. C., 558 Lincoln Ave., Palo Alto. 1914.
*Hoover, Theodore J., 450 Melville Ave., Palo Alto. 1898.
Horsfall, R. Bruce, 1457 E. 18th St., Portland, Ore. 1914.
Horsfall, Mrs. R. Bruce, 1457 E. 18th St., Portland, Ore. 1916.
Howard, O. W., Box 484, Los Angeles. 1895.
*Howell, A. B., Covina. 1908.
Howell, Arthur H., 2919 S. Dakota Ave., Washington, D. C. 1916.
Howell, B. F., Jr., 52 Patton Ave, Princeton, N. J. 1909.
Howes, Paul G., 91 Hope St., Stamford, Conn. 1910.
Hubbard, S., 244 Montecito Ave., Oakland. 1912.
Huber, Wharton, Gwynedd Valley, Pa. 1915.
Hudson, L. W., 201 Bellview Ave., Porterville. 1917.
*Huey, Laurence, 32d St. and Clay Ave., San Diego. 1909.
Humphreys, E. B., 3330 Fernside Blvd., Alameda. 1919.
Hungate, J. W., State Normal, Cheney, Wash. 1918.
Hunt, C. J., 5847 W. Superior St., Chicago, Ill. 1919.
Hunt, Edwin B., 4318 14th St. N. W., Washington, D. C. 1914.
Hunt, Richard M., Museum Vert. Zool., Berkeley. 1918.
Hunter, J. S., Box 482, San Mateo. 1903.
Husher, Mrs. Gertrude H., 821 S. Hope St., Los Angeles. 1913.
Hussey, Roland F., 1308 Ann St., Ann Arbor, Mich. 1916.
Illingsworth, J. F., Gordonvale, Cairns, N. Queensland. 1896.
Ingersoll, Albert M., 908 F St., San Diego. 1895.
Isham, C. Bradley, 27 W. 67th St., New York, N. Y. 1909.
Jackson, Ralph W., R.D. 1, Cambridge, Md. 1917.
Jackson, Thos. H., 304 N. Franklin St., West Chester, Pa. 1911.
Jacobs, J. Warren, 404 S. Washington St., Waynesburg, Pa. 1909.
Jacobson, W. C., 2221 McKinley Ave., Berkeley. 1916.
Jay, Antonin, 1622 Pennsylvania Ave., Los Angeles. 1901.
Jenkins, Ida G., 30 Dearborn St., Roxbury, Mass. 1914.
Jenks, S. Herbert, 1730 N. Fair Oaks Ave., Pasadena. 1918.
Jennery, Chas. F., 100 Gordon Ave., Hyde Park, Mass. 1917.

Jessee, Dr. R. L., Philo, Ill. 1909.
Jesurun, Dr. Mortimer, 443 Emerson St., Palo Alto. 1916.
Jewett, Stanley G., Pendleton, Ore. 1909.
Job, Herbert K., 291 Main St., West Haven, Conn. 1915.
Johnson, Frank Edgar, 16 Amackassin Terrace, Yonkers, N. Y. 1911.
Johnson, Harry V., 2625 Haste St., Berkeley. 1917.
Johnson, Dr. Myrtle E., National City. 1908.
Johnstone, W. B., Edgewood, B. C., Canada. 1918.
Jonas, Coloman, 1023 Broadway, Denver, Colo. 1910.
Jones, Dr. Lombard Carter, Falmouth, Mass. 1918.
Jones, Dr. Lynds, Museum Oberlin Coll., Oberlin, Ohio. 1911.
Jordan, A. H. B., Everett, Wash. 1911.
Jordan, Dr. David Starr, Stanford University. 1902.
Judson, W. B., 826 Washington Bldg., Los Angeles. 1894.
Kaeding, Geo. L., Battle Mountain, Nev. 1903.
Kelley, Mrs. Harriet P., 2505 Logan St., Selma. 1917.
Kellogg, Miss Louise, Box 248, Suisun. 1911.
Kellogg, Ralph T., Silver City, N. M. 1916.
Kellogg, Prof. Vernon L., Stanford University. 1901.
Kelly, Junea W. (Mrs. G. E.), 1311 Grand St., Alameda. 1918.
Kendall, J. N., 253 Magnolia Ave., Long Beach. 1915.
*Kennard, Frederic H., Dudley Road, Newton Centre, Mass. 1911.
Kennedy, Clarence H., Zool. Dept., State College, West Raleigh, N. C. 1912.
Kermode, F., Provincial Museum, Victoria, B. C., Canada. 1911.
Keyes, Prof. Chas. R., Mt. Vernon, Iowa. 1900.
Kibbe, A. S., 1534 Grove St., Berkeley. 1917.
Kibbe, Bessie W. (Mrs. A. S.), 1534 Grove St., Berkeley. 1917.
Kimball, H. H., Long Beach. 1909.
Kirn, Albert J. B., R.D. 4, Solomon, Kan. 1918.
Kitchin, E. A., 4014 N. 35th St., Tacoma, Wash. 1917.
Kittredge, Joseph, Jr., U. S. Forest Service, Missoula, Mont. 1915.
Kluegel, Mrs. Edward A., Carmel. 1916.
Knappen, Nellie C. (Mrs. T. M.), 2719 Woolsey St., Berkeley. 1916.
Knickerbocker, Chas. K., 445 N. Sacramento Ave., Carpenter Sta., Chicago, Ill. 1905.
Knowlton, Dr. F. H., U. S. Nat. Museum, Washington, D. C. 1910.
Kofoid, Prof. C. A., Zool. Dept., Univ. Cal., Berkeley. 1909.
Kohler, Louis S., 47 Wagner Place, Hawthorne, N. J. 1909.
Krehbiel, Leonard, Upland. 1919.
Kretzman, Prof. P. E., Concordia College, 1230 St. Anthony Ave., St. Paul, Minn. 1914.
Kuser, John Dryden, Bernardsville, N. J. 1912.
Kuykendall, W. A., Eugene, Lane Co., Ore. 1916.
Labarthe, Jules, 85 Second St., San Francisco. 1914.
Ladd, Harry Stephen, 4354 McPherson Ave., St. Louis, Mo. 1918.
LaJeunesse, H. V., 1510 Everett St., Oakland. 1916.
Lamb, Chester C., 1628 Van Ness Ave., San Francisco. 1899.
Lane, Geo. W., Morgan Hill. 1914.
Lastreto, C. B., 260 California St., San Francisco. 1913.
*Law, J. Eugene, 333 S. Van Ness Ave., Los Angeles. 1900.
Law, Laura Beatty (Mrs. J. E.), 333 S. Van Ness Ave., Los Angeles. 1915.
Lawson, Ralph, 88 Washington Square, Salem, Mass. 1918.
Layne, J. Gregg, 737 S. Spring St., Los Angeles. 1912.
Leach, Frank A., 217 Hillside Ave., Piedmont. 1917.
Leggett, Dr. R. M., 411 Gunst Bldg., 323 Geary St., San Francisco. 1918.
Lelande, H. J., Court House, Los Angeles. 1897.
Leopold, Aldo, 135 S. 14th St., Albuquerque, N. M. 1916.
Libby, Miss Gretchen L., 221 3d Ave., Santa Barbara. 1911.
Lien, Carl, Westport, Wash. 1917.
Ligon, J. Stokley, Box 131, Albuquerque, N. M. 1914.
Liliencrantz, H. T., Rancho Las Cimas, Hollister. 1916.
Lindsay, Dr. D. Moore, 808 Boston Bldg., Salt Lake City, Utah. 1915.
Litsey, Jno. B., Jr., 2611 May St., Fort Worth, Tex. 1911.
Little, Luther, Calif. Acad. Sciences, San Francisco. 1914.
Littlejohn, Chase, 1226 Warren St., Redwood City. 1901.
Loftfield, Gorm, Carnegie Inst., Tucson, Ariz. 1918.
Lombardi, Ethel, 2331 Le Conte Ave., Berkeley. 1916.

Loomis, Leverett M., Cal. Acad. Sciences, San Francisco. 1902.
Loring, J. Alden, Owego, Tioga Co., N. Y. 1914.
Love, Guy, R.D. 5, Oberlin, Kan. 1913.
Lueddemann, Miss Frieda, 2300 Durant Ave., Berkeley. 1914.
Luther, Clarence H., 8 McElroy Bldg., Fayetteville, Ark. 1909.
McAtee, W. L., Biol. Survey, Washington, D. C. 1907.
*McGregor, R. C., Bureau of Science, Manila, P. I. 1893.
McLain, R. B., Box 132, Hollywood. 1897.
McLean, Donald D., Coulterville. 1916.
McMinn, H. E., 6864 Seminary Court, Oakland. 1918.
Madison, Harold L., Park Museum, Providence, R. I. 1917.
Magee, William A., Jr., R.D. Fruitvale, Box 433, Oakland. 1912.
Mailliard, Ernest C., 1815 Vallejo St., San Francisco. 1909.
Mailliard, John W., 230 California St., San Francisco. 1894.
Mailliard, Joseph, 1815 Vallejo St., San Francisco. 1895.
Marshall, Dr. Benj. M., 2036 D St., Eureka. 1913.
Martin, De Loach, 1223 S. Washington Ave., Marshall, Tex. 1916.
Massey, Herbert, Ivy Lea, Burnage, Didsbury, Manchester, England. 1909.
Meade, Grace S. (Mrs. Calvert), 202 E. 12th St., Oakland. 1916.
Meadows, Donald C., Smiley Hall, Claremont. 1919.
Meeker, Jesse C. A., Box 161, Danbury, Conn. 1907.
Meister, H. D., Wauseon, Ohio. 1909.
Mercer, John D., 104 W. 1st St., Los Angeles. 1918.
Mershon, W. B., Saginaw, Mich. 1911.
Meyer, Miss Heloise, Overlee, Lenox, Mass. 1914.
Michael, Chas. W., 83 Sharon St., San Francisco. 1916.
Middleton, R. J., Jeffersonville, Pa. 1918.
Miller, Mrs. E. C. T., 1010 Euclid Ave., Cleveland, Ohio. 1914.
Miller, Dr. Loye Holmes, State Normal School, Los Angeles. 1905.
Miller, W. De Witt, Amer. Museum Nat. Hist., New York, N. Y. 1909.
Mills, Enos A., Longs Peak, Estes Park, Colo. 1914.
Miner, Dr. H. N.. Colfax, Placer Co. 1903.
Mitchell, H. H., Prov. Museum, Normal School, Regina, Sask., Canada. 1915.
Mitchell, Dr. Walton I., 3210 E. 1st St., Wichita, Kan. 1909.
Moffitt, James, 1818 Broadway, San Francisco. 1917.
Moore, Miss Nellie, 122 Falcon Ave., Long Beach. 1915.
Moore, Robert T., 46 Mansion Ave., Haddonfield, N. J. 1911.
Moran, R. B., 220 S. Wilton Place, Los Angeles. 1897.
*Morcom, G. Frean, 243 N. Coronado St., Los Angeles. 1904.
More, R. L., Vernon, Tex. 1911.
Morgan, Miss Mattie Beth, 908 Jennings Ave., Fort Worth, Tex. 1916.
Morley, S. Griswold, 2535 Etna St., Berkeley. 1916.
Mueller, Carl, Marysville. 1911.
Mullen, James L., 614 E. 6th South St., Salt Lake City, Utah. 1915.
Munro, J. A., Okanagan Landing, B. C., Canada. 1914.
Murie, Olaus J., 219 7th Ave. S., Moorhead, Minn. 1913.
Myers, Mrs. H. W., 311 N. Ave. 66, Los Angeles. 1912.
Nevin, W. H., Pasadena. 1915.
Newhall, Mrs. Chas. S., 2629 Piedmont Ave., Berkeley. 1916.
Nichols, J. T., Amer. Museum Nat. Hist., New York, N. Y. 1909.
Nicholson, Donald J., Orlando, Fla. 1911.
Nicholson, Gordon, W. 7th St., Ontario. 1919.
Noack, H. R., 309 Perry St., Oakland. 1901.
Nokes, Dr. I. D., 134 W. 55th St., Los Angeles. 1914.
Norris, Joseph Parker, Jr., 2122 Pine St., Philadelphia, Pa. 1911.
Norris, Roy, 725 N. 10th St., Richmond, Ind. 1911.
Norton, Arthur H., 22 Elm St., Portland, Me. 1918.
Oberholser, Dr. Harry C., 2805 18th St., N. W., Washington, D. C. 1904.
O'Connell, John, 425 New Call Bldg., San Francisco. 1919.
O'Farrell, Mrs. Mabel E., 2403 F St., San Diego. 1917.
Ohl, H. C., McKittrick. 1913.
Ohlendorf, W. C., 1924 Blue Island Ave., Chicago, Ill. 1910.
Osencup, Claten, 1267 Sunset Ave., Pasadena. 1917.
Osgood, Wilfred H., Field Museum Nat. Hist., Chicago, Ill. 1893.
Osterhout, Geo. E., Windsor, Colo. 1915.
Owen, Virgil W., 832 Beacon St., Los Angeles. 1896.
Palmer, Miss Elizabeth Day, 1741 Harvard Blvd., Los Angeles. 1909.

Palmer, R. H., Stanford University. 1915.
Palmer, Dr. T. S., 1939 Biltmore St., N. W., Washington, D. C. 1903.
Parcell, Zulema L., 802 W. Washington St., Los Angeles. 1919.
Parker, Herbert, South Lancaster, Mass. 1911.
Parks, H. O., Willcox, Ariz. 1919.
Parmenter, Henry E., 12th Naval Dist., 417 Sheldon Bldg., San Francisco. 1916.
Parsons, Mrs. Marion Randall, Mosswood Road, Berkeley. 1917.
Paul, J. H., 1320 E. 2d St. S., Salt Lake City, Utah. 1915.
Paul, Lucius H., 1485 North St., Rochester, N. Y. 1911.
Peabody, Rev. P. B., Blue Rapids, Kan. 1904.
Pearson, T. Gilbert, 1974 Broadway, New York, N. Y. 1910.
Peck, Miss L. M., 1510 Girard St., Los Angeles. 1919.
Peck, Morton E., 244 N. 12th St., Salem, Ore. 1909.
Pemberton, J. R., 729 Kennedy Bldg., Tulsa, Okla. 1900.
Peyton, Lawrence, R.D. 2, Fillmore. 1909.
Peyton, Sidney B., Sespe. 1913.
Phelps, Frank M., 212 E. 4th St., Elyria, Ohio. 1912.
Philipp, Philip Bernard, 220 Broadway, New York, N. Y. 1911.
Phillips, C. L., 5 W. Weir St., Taunton, Mass. 1915.
Phillips, John C., Knobfields, Wenham, Mass. 1911.
Pierce, Wright M., Box 116, Claremont. 1902.
Pierpont, Philip, Nordhoff. 1913.
Pilsbury, Frank O., 1088 Main St., Walpole, Mass. 1911.
Pleasants, Mrs. J. E., R.D. 3, Orange. 1900.
Powell, Miss Helen, 2703 Dwight Way, Berkeley. 1914.
Price, A. E., Grant Park, Ill. 1905.
Pringle, Miss Cornelia Covington, 1705 Gough St., San Francisco. 1915.
Purington, Mrs. C. A., 28 Hermosa Ave., Long Beach. 1915.
Randolph, Miss Flora A., 2962 Derby St., Berkeley. 1907.
Rankin, Edward P., 66 Appraisers Bldg., San Francisco. 1913.
Rathbun, S. F., 305 Marion Bldg., Seattle, Wash. 1904.
Rawson, Charles I., Oxford, Mass. 1918.
Ray, Milton S., 29 Spear St., San Francisco. 1899.
Redington, Robert R., New Departure Mfg. Co., Bristol, Conn. 1917.
Reis, C. Oscar, 646 Juanita Ave., Los Angeles. 1917.
Reynolds, L. R., 11 Ellsworth Ave., Brockton, Mass. 1913.
Reynolds, Nephi, Wn. Arms and Sp't'g Goods Co., Salt Lake City, Utah. 1919.
Rich, Dr. Guy C., 1820 El Cerrito Place, Hollywood. 1911.
Rich, Selwyn, Box 55, Claremont. 1919.
Richards, E. B., 128 Chester St., Grass Valley. 1909.
Richards, Dr. T. W., Naval Hospital, New London, Conn. 1908.
Richards, W. W., 1512 Broadway, Oakland. 1915.
Richardson, W. D., 4215 Prairie Ave., Chicago, Ill. 1918.
Richey, J. Howard, 277 W. Dakota St., Pasadena. 1914.
Richmond, Dr. Chas. W., U. S. Nat. Museum, Washington, D. C. 1904.
Richmond, Watts L., Batavia, N. Y. 1915.
Riley, J. H., U. S. Nat. Museum, Washington, D. C. 1909.
Rittenhouse, Prof. Samuel, Univ. S. Cal., Los Angeles. 1916.
Ritter, Prof. W. E., LaJolla. 1901.
Roberts, Dr. T. S., Animal Biol. Bldg., Univ. Minn., Minneapolis, Minn. 1909.
Robertson, Howard, Box 639, Sta. C., Los Angeles. 1896.
Robertson, John McB., R.D. 1, Box 13, Buena Park, Orange Co. 1913.
Roe, Mrs. E. D., 744 Guerro St., San Francisco. 1919.
Rowley, J., 42 Plaza Drive, Berkeley. 1909.
Rust, Henry J., Box 683, Coeur d'Alene, Idaho. 1911.
Sage, Jno. H., Portland, Conn. 1910.
Sampson, W. B., 1005 N. San Joaquin St., Stockton. 1894.
Sanford, Dr. Leonard C., 347 Temple St., New Haven, Conn. 1915.
Sanford, W. H., 919 W. Acacia St., Stockton. 1915.
Saunders, Aretas A., 143 East Ave., Norwalk, Conn. 1909.
Saunders, W. E., London, Ont., Canada. 1910.
Schaefer, Oscar F., 669 Genesee St., Rochester, N. Y. 1917.
Schleichert, Ernest K., 3935 7th St., N. W., Washington, D. C. 1919.
Schlesinger, Mrs. Jane L., 1417 Filbert St., Oakland. 1915.
Schneider, Fred A., 646 Emery St., San Jose. 1901.
Schneider, J. J., Box 363, Anaheim. 1899.
Schussler, Geo. W., 1345 Oak St., San Francisco. 1911.

Sclater, William Lutley, 10 Sloane Court, London, S. W., England. 1909.
Scott, Carroll DeW., 4146 Jackdaw St., San Diego. 1915.
Sellmer, Walter B., 425 New Call Bldg., San Francisco. 1919.
Sharp, Clarence S., Escondido. 1902.
Sharples, Robert P., West Chester, Pa. 1911.
Shaw, W. T., 1000 Thatuna St., Pullman, Wash. 1911.
Shelton, Alfred C., Johnston-Shelton Co., Dayton, Ohio. 1909.
Shepard, John Alden, 437 3d Ave., Salt Lake City, Utah. 1919.
*Sherman, Althea R., National, via McGregor, Iowa. 1911.
Shiras, George, 3rd, Stoneleigh Court, Washington, D. C. 1914.
Silliman, Edmund, Alisal and Ryker Sts., Salinas. 1918.
Silliman, O. P., 220 Salinas St., Salinas. 1913.
Simmons, George F., 701 Holman Ave., Houston, Tex. 1913.
Sismey, E. D., Box 222, Penticton, B. C., Canada. 1919.
Skinner, M P., Summerville, S. C. 1915.
Sloanaker, Jos. L., 1105 Spofford Ave., Spokane, Wash. 1910.
Smith, Allyn G., 1303 7th St., Coronado. 1909.
Smith, Austin Paul, Dos Cabezos, Ariz. 1907.
Smith, A. Russell, Mt. Carmel Ave., North Glenside, Penn. 1919.
Smith, C. R., 563 42d Ave., San Francisco. 1917.
Smith, Prof. Frank, 913 W. California Ave., Urbana, Ill. 1911.
Smith, Franklin J., Box 98, Eureka. 1913.
Smith, Horace G., 2918 Lafayette St., Denver, Colo. 1914.
Smith, Lance H., 803 Northwestern Bank Bldg., Portland, Ore. 1915.
Smith, Napier, 46 Cote des Neiges Road, Montreal, Que., Canada. 1919.
Smyth, W. H., Fernwald, head of Dwight Way, Berkeley. 1918.
Smyth, Mrs. W. H., Fernwald, head of Dwight Way, Berkeley. 1918.
Snyder, Prof. J. O., Box 775, Stanford University. 1900.
Spaulding, M. Herrick, Agr. Coll., Bozeman, Mont. 1918.
Stafford, Walter A., 31 Park Way, Piedmont. 1917.
Steinbeck, William, 1029 N. Hunter St., Stockton. 1897.
Steinmetz, Frank J., 1021 Ramona St., Palo Alto. 1917.
Stephens, T. C., Morningside College, Sioux City, Iowa. 1914.
Stevens, Dr. J. F., 304 Funke Bldg., Lincoln, Neb. 1911.
Still, Donald, 415 E. 2d St., Tucson, Ariz. 1918.
Stivers, Dr. C. G., 502 Auditorium Bldg., Los Angeles. 1914.
Stoddard, H. L., Field Museum Nat. Hist., Chicago, Ill. 1914.
Stone, D. D., R.D. 3, Oswego, N. Y. 1909.
Stone, Geo. E., 1725 Le Roy Ave., Berkeley. 1912.
Stoner, Emerson A., Box 444, Benicia. 1918.
Storer, Miss Mary S., 467 San Pablo Ave., Fresno. 1914.
Storer, Tracy I., Museum Vert. Zool., Berkeley. 1910.
Stormont, W. P., 116 E. Ave. 52, Los Angeles. 1917.
Stout, Gardner D., 129 E. 55th St., New York, N. Y. 1918.
Strong, W. A., 41 Grand Ave., San Jose. 1912.
Stuart, Geo. H., 3d, N. W. cor. Broad & Chestnut Sts., Philadelphia, Pa. 1913.
Sugden, J. W., 47 S. 8th W. St., Salt Lake City, Utah. 1915.
Swales, B. H., U. S. Nat. Museum, Washington, D. C. 1906.
Swarth, Harry S., Museum Vert. Zool., Berkeley. 1897.
Sweeney, Joseph A., U. S. Forest Service, Halsey, Neb. 1912.
Swenk, Prof. Myron Harmon, 3028 Starr St., Lincoln, Neb. 1916.
Swezy, Dr. Olive, Zool. Dept., Univ. Cal., Berkeley. 1914.
Sykes, Geo. F., 322 Agr. Hall, Corvallis, Ore. 1913.
Tallman, George, 2127 Court St., Los Angeles. 1915.
Taverner, P. A., Zool. Div., Geol. Survey, Ottawa, Ont., Canada. 1909.
Taylor, E. F., Grass Valley, Nevada Co. 1910.
Taylor, Jesse H., 210 Myrtle Ave., Eagle Rock. 1919.
Taylor, L. E., R.D. 2, Reno, Nev. 1897.
Taylor, Dr. Walter P., 1428 Perry Place, N. W., Washington, D. C. 1905.
Terrill, L. McI., 44 Stanley Ave., St. Lambert, Que., Canada. 1911.
Test, Dr. Louis A., 629 Russell St., Lafayette, Ind. 1908.
*Thayer, John E., Box 98, Lancaster, Mass. 1906.
Thompson, J. Walcott, 527 E. 1st S. St., Salt Lake City, Utah. 1918.

Thompson, Thos. E., 5035 Stratford Road, Los Angeles. 1919.
Thomson, Miss Isabel A., Fallon, Nev. 1918.
Thowless, Herbert L., 765 Broad St., Newark, N. J. 1919.
Todd, W. E. Clyde, Carnegie Museum, Pittsburg, Pa. 1909.
Treganza, A. O., 610 Utah Svgs. & Trust Bldg., Salt Lake City, Utah. 1907.
Treganza, Mrs. A. O., Lemon Grove. 1915.
Trenor, T., Box 1149, Los Angeles. 1913.
Trescot, E. B., R.D. 1, Box 554, Santa Rosa. 1915.
Trippe, Thomas M., Howardsville, Colo. 1911.
Trumbull, J. H., 39 Farmington Ave., Plainville, Conn. 1911.
Tyler, John G., P. O. Box 445, Turlock. 1905.
Tyler, Dr. Winsor M., 522 Massachusetts Ave., Lexington, Mass. 1914.
Ufford, Elmer, Oberlin, Kan. 1917.
Unglish, W. E., Gilroy. 1910.
Van Denburgh, Dr. John, 240 Stockton St., San Francisco. 1916.
Van Fleet, Clark C., Box 468, Santa Rosa. 1906.
Van Rossem, Lieut. Adriaan, Camp Hancock, Ga. 1909.
Van Straaten, H., Nederlandsche Handel, Maatschappy, Amsterdam, Holland. 1918.
Vilas, A. H., 315 E. Valerio St., Santa Barbara. 1916.
Vorhies, Chas. T., Univ. Ariz., Tucson, Ariz. 1916.
Walker, Alex., Hemlock, Ore. 1911.
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A FAVORITE NESTING HAUNT OF THE MERRILL SONG SPARROW

By HENRY J. RUST

WITH EIGHT PHOTOS BY THE AUTHOR

OF the various song birds that nest in this locality, none seem to derive so many advantages from its preferred nesting site as does the Merrill Song Sparrow (*Melospiza melodia merrilli*). While this does not apply to every pair, it does seem applicable to the four or five pairs which have selected in close proximity what may be considered the most typical haunt. Nearness to water seems to be the dominating factor in the needs of this species, though I have found the birds in moderate numbers breeding and remaining throughout the season on low brushy hillsides bordering the city limits, and in thickets on used and vacant property at a considerable distance from open water.

The Merrill Song Sparrow is partially resident in this locality, and I believe from long continued observations many if not all the remaining birds are adult males, the females and young of the season migrating to a milder climate where more abundant food can be obtained during the winter months. The presence of the remaining birds from November until February would scarcely be noted if they were not occasionally routed out of their winter quarters, namely, old wood and brush piles, tangles of vines, and thickets about old outbuildings. The bird disturbed then will mount any low convenient perch and greet the intruder with a number of scolding chirps, and if not molested further will soon retire into seclusion—in striking contrast to the joyful melodious character of this little songster during the summer days. On sunny days in mild winters, during the month of February, the Merrill Song Sparrow will ascend to the top of a deciduous tree, bush or housetop and relieve his pent-up feelings in short outbursts of song. By the middle of March the males are joined by their mates, and after a few more days of sunshine and song, the willow catkins having burst their bonds and insect life begun to stir, the Song Sparrows retire to their preferred nesting places for the summer season. In describing a favorite haunt of this species, I have selected one that I have visited often, not very far from my home, and one that seems to meet well all the requirements in the home life of the Merrill Song Sparrow.

The extreme west end of Fernan Lake (see CONDOR, XVII, pp. 119, 122) narrows down and forms what is, during the early part of the season, the outlet for the spring overflow caused by the melting of snow from the surrounding hills. The amount of the water depends on the snow that has accumulated during the winter months, and usually covers the small meadow (fig. 26) to a depth of one to two feet. As the overflow recedes, generally by the middle of May, the various forms of plant life take on their growth activities. Beginning with the higher bank which is the limit of the overflow (foreground, fig. 26) is a fringe of wild rose bushes (*Rosa nutkana*) intermingled with *Spirea menziesii*, black haw (*Crataegus douglasii*) and serviceberry bushes, further to the right and left becoming a dense thicket, overshadowed by a grove of quaking

Fig. 26. NESTING HAUNT OF THE MERRILL SONG SPARROW; NEAR COEUR D'ALENE, IDAHO, MAY 15, 1918.

asp (*Populus tremuloides*) and a few cottonwood trees. These deciduous trees and bushes form a fairly heavy humus which harbors a host of insect life and constitutes the principal feeding ground for the several pairs of Song Sparrows which are nesting near by. The small open meadow is covered with a rank growth of several species of sedge, the dry blades and culms of which form the bulk of the outer nest material; it matches up closely with the dry clumps of similar material that have lodged in the larger spirea bushes and willows from previous overflows and makes it an easy matter to overlook nests because of this striking resemblance.

Scattered through the opening are clumps and single bushes of spirea which is the shrub preferred for the location of the first nest of the season. Then comes a fringe of small narrow-leafed willows (*Salix geyeriana*), these

affording the bright sunny look-outs from which the male Song Sparrow pours forth his sweet song throughout the summer days.

Beyond the willows, a fringe of spirea becomes very thick in places, and when in full leaf this makes a safe hiding place for a nest. This shrub, with occasional rose bushes and willows near the water, is very often selected for the second brood. Very few of these spirea shrubs have not waved their pretty dark pink plumes over a family of Song Sparrows in seasons past or else will not do so in seasons to come. Beyond the fringe of spirea, isolated and continuous clumps of sedge reach to the water's edge. As the water in the outlet becomes shallow and the low ground dry, such a clump is occasionally selected

Fig. 27. Nest and young of Merrill Song Sparrow, situated in spirea bush; photographed April 28, 1918.

as a location for the second nest and probably also for a third. A few tules (*Scirpus occidentalis*) grow along the water's edge, and the balance of the water, depending on its depth, is fairly well covered with water lily pads (*Nymphaea polysepala*). This appears to be the Song Sparrows' playground, for they can be found any summer day flitting back and forth across the narrow outlet or hopping from pad to pad, sometimes wading along the edge in the shallow parts, reminding one of the Water Ouzel except in color. The setting is practically the same on the other side of the outlet except that at the beginning of the high ground several species of willow of a larger variety replace *Salix geyeriana*. The Douglas firs growing on the hillside tend to cast a sha-

dow over part of the open flat and while a few pairs of Song Sparrows nest in the fringe of spirea nearest the water they much prefer the open sunny side.

The type specimen of *Melospiza melodia merrilli* was collected not far from the haunt I have described, by Dr. J. C. Merrill, and described by Mr. William Brewster in the *Auk*, vol. 13, 1896, p. 46. In his notes on this species (*Auk*, vol. 15, 1898, p. 16) Dr. Merrill gives as his earliest nesting record, female incubating April 24, 1896, which was a cold backward season. My earliest nesting record, nest wedged amid group of spirea stems 18 inches from base of bush, four eggs, female incubating, ground slightly covered with water, was April 12, 1918, a warm advanced spring. Nests with the first set of eggs can be looked for with certainty from after the first week in April until the first

Fig. 28. Nest of Merrill Song Sparrow containing five young, with female parent feeding them; photographed May 25, 1918. This nest, also in a spirea bush, was located 35 yards from the one shown in the preceding picture.

week in May and are invariably placed in bushes partly submerged in water. There is no doubt that many of the first nests are washed out and the contents destroyed, during backward seasons, by heavy freshets.

With incubation lasting twelve days and the young able to leave the nest at the age of 14 to 16 days, the first brood are able to rustle for themselves by the time the majority of the other song birds are just selecting nesting sites. The first nests of the season, built in spirea bushes, are rather bulky affairs, wedged in against a number of stems for support. It does not take much

pressure to tilt some of them on one side, and it is a wonder sometimes how the four or five young manage to keep right side up. (See fig. 27.) These nests are composed almost entirely of the dead blades and culms of the sedge grow-

Fig. 29. Nesting site of Merrill Song Sparrow in clump of sedge (where marked with white cross). View towards the east; photographed June 15, 1918.

ing about the nesting site and are lined with a few fine dry grasses and horsehair brought from a distance. While a great many song birds depend on foliage of some kind for concealment of their nests, the Merrill Song Sparrow

trusts mostly to the loose brown culms matching up with the numerous stems supporting the nest and to the dry clumps of sedge lodged here and there in the surrounding bushes.

The female when brooding will usually permit an approach of four or five feet; any further intrusion—just a flash of brown and she is gone, passing through the bushes as low as possible for some distance before ascending to a

Fig. 30. NEST AND TWO DIVERSELY COLORED EGGS OF MERRILL SONG SPARROW, SITUATED IN CLUMP OF SEDGE; PHOTOGRAPHED JUNE 15, 1918.

higher perch in the willows and beginning her scolding chirp. If the female happens to be away from the nest when strangers are about she will meet you half way and on drawing closer to the nest will often emit a continued harsh scolding note differing from that of any other species of song bird I have heard. Should there be young in the nest the male soon puts in his appearance and together they keep up a constant scolding as long as danger is near.

The young are not lacking in appetite and at the slightest provocation up go open mouths, each large enough to accommodate almost any size of bug (fig. 27). While the surroundings teem with insect life it seems an endless task for the mother bird to satisfy the hungry brood (fig. 28). A greater portion of the food is gleaned on or near the ground. I have noted a female Song Sparrow scratching among the dead leaves in search of food similar in manner to a domestic fowl.

Until the young birds are fairly strong on the wing a greater part of their time is spent among the clumps of sedge and in the dense underbrush where they can hide effectually on short notice. The second nests of the season, placed in spirea, rosebushes, occasional willows and clumps of sedge, are more compact in form and made of whatever species of sedge or grass that happens to be near, lined with finer material and a few strands of horsehair; eggs four or five in number, usually four.

Fig. 31. Female Merrill Song Sparrow on same nest as shown in preceding picture; photographed June 15, 1918.

The date of the second nesting depends somewhat on the date and success of the first brood. The second set of eggs can be looked for any time from the first until the third week in June, and usually by the second week in July the second brood are out of the nest and learning to care for themselves.

A female flushed from her nest in a clump of sedge (*Carex rostrata*) (fig. 29) near the water's edge, June 15, disclosed an incomplete set of two eggs showing the greatest variance in coloration (fig. 30). I returned several days later expecting to find a larger set, but no more were added. This little mother bird was very attentive to her nest and its two treasures. When first disturbed she would dash to the left into some clumps of sedge and spirea bushes, then across the outlet where she would remain for a short time and then come hopping back from pad to pad. She would then approach under cover as near as possible to the clump sheltering the nest, make a short run, hop up over the fallen blades, and settle down on her nest (fig. 31). After being disturbed a number of times she would dash away as at first into the sedge but would return almost immediately and resume her task of incubating, seemingly unconcerned with the many dangers that seemed to beset her on all sides. A pair of

Sharp-shinned Hawks were nesting on the wooded hillside across the outlet, a family of skunks had its den under the root of a fallen tree hardly 30 yards away, snakes were plentiful among the sedge, minks and weasels passed up and down the outlet, and many barefoot boys wended their way past the nesting site to the fishing holes farther up along the shores. The unusual spring freshets take a heavy toll of the first nestlings and these other agencies destroy many of the second and third broods; so that the number of Merrill Song Sparrows are kept at a minimum.

Fig. 32. Young Merrill Song Sparrow, about fifteen days old and ready to leave nest. There were but two young in this nest, which was 48 yards from the nest shown in figure 28. Photographed May 25, 1918.

Very few species of birds are to be found in or about this haunt during the first nesting period of the Song Sparrows. A few pairs of Long-tailed Chickadees pass through the willows looking for a promising nesting stub,

Fig. 33. Four of the five young Merrill Song Sparrows from the nest shown in figure 28.

and there is an occasional pair of Montana Juncos, Western Robins, and now and then a flock of Brewer Blackbirds. The mating calls of the Red-shafted

Flicker are frequently heard from the other side of the outlet, as also the song of the Western Meadowlark from the open fields bordering on the north side.

How different during the second nesting period. It is the middle of June; the water lilies are in bloom, the large flowering spikes of the spirea are waving in the breeze, the odor of the wild rose is in the air, the Merrill Song Sparrows are now nesting near the edge of the outlet, and the willows and thickets at either end of the small meadow on both sides of the outlet seem fairly alive with birds; the Song Sparrows have many neighbors now. Yellow Warblers, Tolmie Warblers, Western Yellowthroats, Western Warbling Vireos, Red-eyed Vireos, American Redstarts, Western Robins, Black-headed Grosbeaks and Catbirds are nesting in and about the haunt.

All through the morning hours, and late in the afternoon, the songs of the various males can be heard. but with all their love and good cheer, the Song Sparrow is able to hold his own, and he makes the surroundings ring with his sweet melody. As the day draws to its close the Robin sings his evening lay, and as the dark shadows creep over the outlet, the little brown bats steal forth from their hiding places and join company with the Pacific Nighthawks in their circling flight over the chosen home of the Merrill Song Sparrow.

Couer d'Alene, Idaho, February 6, 1919.

NESTING OF THE NORTHERN PILEATED WOODPECKER

By H. W. CARRIGER and GURNIE WELLS

WITH ONE PHOTO

THE Northern Pileated Woodpecker (*Phloeotomus pileatus abieticola*), while not rare, is such a wary bird that its nesting habits in California are but little known. In a search through our various publications dealing with such subjects we fail to find a record of the taking of a single set of eggs of this species in the State. It seems probable that there are fewer California taken eggs of this bird in collections than even eggs of the California Condor. Barlow (CONDOR, III, 1901, p. 163) records a nest with young birds at Fyffe on June 13, 1897. Sheldon (CONDOR, IX, 1907, p. 188) records a nest with young near Big Meadows, Plumas County. The date is not given but it is assumed to be early in July.

This paper embraces a partial account of our joint studies of this species over a period of five years (1914 to 1918), and the final culmination of our efforts in the taking of two sets of the eggs. The region worked lies near Cisco, Placer County, California, and it seems probable that the same pair of birds was observed during the five-year period.

While working among the dead and dying trees at the upper end of a large mountain lake in June of 1914 the loud cackle of this unique bird was frequently heard. The type of country appeared to be suitable for the residence of the bird and it was then determined to pay especial attention to this species when next we should visit the lake, it then being too late in the season for eggs. Some

time was spent in watching the birds feed, as they tore and pried off large slabs of dead bark in their search for various grubs and insects.

In 1915 we reached Cisco early in June and at first opportunity searched for our birds. A hard climb took us to the top of the dividing ridge and a swift descent, to the shores of the lake. One of the first birds seen was the Pileated Woodpecker as it flew from a tree standing in deep water to the thick woods across the lake. We passed near this tree and hid in some brush near by to await the appearance of the bird. It shortly returned and made straight for the tree, alighting on the opposite side from that facing us. We watched sev-

Fig. 34. WELLS CLIMBING TO NEST OF NORTHERN PILEATED WOODPECKER, IN ASPEN, IN NEIGHBORHOOD OF CISCO, PLACER COUNTY, CALIFORNIA; ENTRANCE TO NEST CAVITY CAN BE SEEN IN THE TREE TRUNK AT EXTREME TOP OF PICTURE.

eral minutes and as the bird did not appear we approached nearer the tree and were chagrined to discover a large hole about twenty feet up, in plain view and on the side of the tree which had first been exposed to us. We clapped our hands and immediately the bird appeared at the hole and flew cackling away. The tree stood about fifteen feet from the shore of the lake and in about five feet of water. At its base the diameter was about eighteen inches, at the nest entrance about ten. The tree was a live aspen. The base was exceedingly slippery and altogether the examination of the nest presented difficulties.

Floating near the shore was a long dead trunk with a projecting limb which we decided to use as a raft to approach the tree. We each made an attempt to reach the tree but on both trials the raft turned over and we each got an icy bath. Inasmuch as the hills were covered with snow and the temperature on that day was low we were not particularly pleased with the ducking. We decided the tree raft would not serve and accordingly we made a fast trip back to headquarters, covering the distance in less time than that taken in coming out.

We soon returned with some planks and a lot of spikes with which we made a good raft and succeeded in reaching the nest tree. By driving spikes in the trunk Wells reached the nest and drew out a small young fledgling. The appearance of this object, resembling a skinned Chipmunk instead of a large white egg, certainly disappointed us.

The nest cavity was eighteen inches deep and six inches in diameter, while the entrance was three inches in width. The entire excavation had been made in live wood although there were plenty of large dead trees near by.

After leaving the nest we watched the old birds, both of which came to the tree and were quite tame as they fed the young, which, by the way, were three in number. The old birds reminded us a great deal of a pair of Flickers in their general movements and manner.

Determining to obtain a set of eggs the following spring, a visit was made on May 19, 1916, to the same mountain lake. Conditions were found to be quite similar to those of the previous year, there being much snow on the ground. The arrival at the lake was made enjoyable by a view of the pair of Woodpeckers flying towards the woods from the same tree in which the nest was located the previous year. An examination of the old tree was made in double-quick time and resulted in finding a second hole located three feet higher up and on the opposite side of the tree. Although two weeks earlier this year than the last we were again doomed to disappointment, for the nest contained three newly hatched young and one unhatched egg. The young birds evidently remained in the nest for about thirty days as they were seen climbing about the trees on June 20.

The following year (1917) the locality was visited on May 5—we being determined to get ahead of the birds this time. The season was more advanced than on the three previous years and but little snow was on the ground and the lake at this point had less than three feet of water in it. The Pileated Woodpeckers had abandoned the lake and were making their home in a tree located in the channel of a small stream which flowed into the lake and about three hundred yards from their former site. The nest was found to be about half completed. Visits were made to it on several occasions until May 26, but the birds were not seen again. Apparently they had moved out of the basin entirely, as they could not be located.

While spending the winter of 1917-1918 at Summit, Wells determined to make the most of his opportunities to study the Woodpeckers. Through several friends living at Cisco the birds were kept under observation throughout the winter. It was found that the birds seldom strayed as far as two or three miles from their lake and that only the one pair was in evidence.

In 1918, the first attempt to locate the nest was made on May 2, by Wells in company with W. G. Flickinger. On nearing the lake several unfinished cavities were noted, so that the date for eggs seemed about right. There was but

little snow on the ground and practically no water in the lake. A search was then made through the aspen grove which in former years had stood in its entirety in from two to seven or eight feet of water, with the result that Mr. Flickinger discovered a fresh hole forty feet up in a live aspen growing close to the lake shore. Enough chips lay at the base of the tree to indicate that the cavity must be nearly finished. The birds were not in evidence, so the nest was examined. It was found to be completed, but contained no eggs.

Allowing ten days for the birds to lay a complete set, the nest was visited again on May 12, by Wells and Flickinger. We had great confidence that on this trip we would finally get a set of this prince of woodpeckers. When we reached the tree a smart rap on the trunk brought the old bird to the entrance with an anxious expression on her face and we *knew* this time that we would soon have the eggs. She flew a short distance away and was soon joined by her mate. We hid in the brush and waited about thirty minutes, when the female returned and entered the nest. We thus felt positive that the nest contained a full set of eggs, and Wells accordingly strapped on his irons and climbed the tree. His exultant shout proclaimed that the eggs were there—a set of four fresh glossy eggs. The nest cavity was eighteen inches deep by about six in diameter, while the entrance was nearly four inches across.

The nest was visited again on June 1 by both of us, and to our surprise we found that the birds had used the same cavity for a second set of eggs, four in number, which were three-quarters incubated. The short time intervening between the two sets shows that the birds did not lose any time after their first set was lost to them. The locality was again visited on June 30 and we found that the birds had finished another cavity about two hundred feet from the first tree and apparently the female was brooding a third set. We did not disturb the bird and hope that she successfully raised her brood.

Inasmuch as the lake contained no water at this point we made a careful search of the upper end of the basin with the result that twenty cavities in all were located in various trees in what is usually the lake or very close to its shores. Most of these cavities were in live aspens. Apparently this pair of birds has nested here for a great many years, for although we have carefully worked the surrounding country for miles in every direction we have never discovered other birds or their cavities. Inasmuch as the food supply is abundant, and hunters rarely visit the region, it is assumed that the species is simply an extremely rare one for this portion of the Sierra Nevada.

The two sets of eggs are identical in shape, size, and other characters. They are small for the bird, being but little larger than eggs of the Red-shafted Flicker. In their glossy surface, pyriform shape and hardness of shell they are distinctively eggs of the Picidae. The average measurements of the four eggs are about 1.29x0.99 inches.

Oakland, California, February 24, 1919.

A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

(*Continued from page 114*)

VII. THE GEM OF THE SWEETWATERS IN COVE AND SHORE

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THE conditions that make the Coulee a favorite resort of families of water birds make the small easternmost lake of the Sweetwater chain the chosen home of hordes of birds. While almost in sight from the traveled Belgrade Bridge, a mile to the west of it, the lake is so completely cut off by the moat-like Coulee and its marshy venous meshwork that the nearest way to it by road from the Bridge is five or six miles around along the northern oval of the mail carrier's route, which crosses the moat on the grass-grown, black framed Coulee Bridge and making a broad loop out over grain fields comes no nearer than the far side of a wide field from the lake on its way back to town.

Remote and out of evidence to start with, the little lake has many other advantages. Nearly round, it is only about three quarters of a mile across, so that the wind has less sweep than over the larger lakes, and when it blows too hard, sheltering banks protect the birds, for its surface is sunk well below the level of the surrounding grain fields and scattered bordering clumps of trees. On three sides the lake is fringed by sheltering tule marsh and on the fourth by a protecting strip of woods; while additional shelter is afforded by tule islands, long streaks of tule across the middle of the lake, between which the water fowl can gather at a safe distance from passersby along the shore. Lying close to the marsh-bordered Coulee and a long pasture slough on whose edges large flocks of Ducks rest when not feeding, the small Sweetwater has also within a mile or so, three open-shored lakes, to which the Ducks that spend their days on the small lake can fly for greater security at night. All these conditions make the east Sweetwater so popular among both Ducks and hunters that a hunting lodge formerly near the north Sweetwater pass, during a recent winter was moved on the ice down the Coulee to this lake. Between this vacant hunting lodge in the woods on the south shore and the farmhouse heading the grain fields on the north end of the lake is a grassy road following the east shore, and as I walked back and forth over it, often just to see what birds were there, frequently on my way around the lake or out to the mail box in the wheat field, I had ample opportunity to become acquainted with its many tenants.

Among the most interesting were the Black-crowned Night Herons, and they were often seen on fence posts leading down into the lake at the ends of pasture lines, as well as standing at the foot of tules, either on the islands or along the marshy border of the lake; preferably half hidden by a thin tule veil. Sometimes one would be seen clambering around among the black rods of a tule island, or rising from a blind with a loud *squawk*. They were seen at all hours of day, and found fishing in the afternoons, but as their name indicates, their normal fishing habit was probably best illustrated by one seen at 7:40 P. M. flying across the lake and lighting at the edge of a tule island as if ready for night work.

In driving by the shore on August 14, nine of the large birds were flushed, so many in the brown plumage of the young that it was evident a family had been launched. A young one seen on a fence post reflected in the water, by help of the glass showed the characteristic red eye and yellowish green bill and legs. In one of the dark-backed adults mounted on a post, the usually creamy forehead and chin were a beautiful yellow, and he appropriately raised his yellow foot to scratch his sulphury throat.

A section of fence extending into the lake at the corner nearest the farmhouse was one of the favorite perches of the Herons, and they got so used to seeing me go along that they would not rise when I passed. At sunset one night a party of them was fishing in this corner; the adults perched on posts. The young in alighting among the tules would flap their brown-striped wings over the marsh, their long yellowish green legs dangling in indecision till their owners finally got courage to let themselves down among the sharp pointed reeds.

One of the old Herons, an Eager Fisherman, on the post farthest out in the lake, watched the water for a long time, head down, legs bent, and toes hanging over the edge of the post, ready to drop at the flash of a minnow; but though many came to the surface not far away, none came to his net. Again and again he started to lift his wings, evidently from false hopes. An inexperienced young one on an adjoining post was an amusing contrast in pose and method to the Eager Fisherman. Instead of leaning over, ready to drop on his prey, he stood with body erect, legs straight, and feet firmly planted on the middle of the post. But although he had much to learn, before long he began to look at the water with signs of intelligence, and to get his spear ready for action.

A second brown streaked one flew over and lit on the barbed wire between posts just above the surface of the water, close to the post of the Eager Fisherman, who, although his prospective minnows were probably scared away by the interruption, turned with evident interest toward the young one who may well have been his son. A third young Heron tried to light on the wire farther from the supporting post but wobbled so much, in spite of raised wings, that he had to give up the attempt. He then flew to his inexperienced brother on the post, but was jabbed at by a long bill till he had to go about his business. And, sad to relate, before the Eager Fisherman had ever caught anything, another adult came and took forcible possession of his post!

While this pantomime was progressing, some of the other Herons did a most surprising thing. One would fly out beyond the last post, and hesitating, almost hovering over the water, peer down into it; then go on; after a while coming back to try again, and finally with dangling legs let itself cautiously down till up to its body in water, when it sat there horizontally like a Duck, looking as awkward and uncomfortable as you would expect a long-legged Heron to do in so unnatural a position. Then suddenly it would shoot forward and fly up with something—probably a minnow—dangling from its bill! What was the explanation? How could a long-legged Heron sit on the water? At first I thought there might be submerged fence posts to stand on, but then remembered the muskrat houses said to have been in sight the year before when the water was lower, and realized that two of the Herons lit just about far enough apart to be standing on two ends of a long house. The farmer confirmed this theory, saying that while there were no fence posts, there were submerged muskrat houses.

On the posts where the Night Herons fished, Black Terns were frequently seen early in August feeding their young, with whose cries the shore resounded. While the crying young ones stood on the fence posts their parents would fly above, and hovering over them a moment, with long bills extended, feed them on the wing. A family was seen sitting in a row on some sliver in the lake, one day, and to my great amusement a Duck sitting near watched them, moving its head as they moved; but soon, as if tired of the confusion, it swam off to more quiet waters. In another place one of the facile-winged birds was seen see-sawing over the water catching insects for its evening meal. Darting hither and yon, the picturesque terns often added a sudden touch of life to a quiet landscape. In one case, on an August afternoon when a row of cows stood cooling themselves in the shallow water shaded by the trees along shore, and Bank Swallows were skimming over the still white surface of the lake, suddenly a flock of the long-winged Black Terns swept in and darted about over the surface till the water seemed all a'move with long wings.

In striking contrast to these swift-flying birds of the air were the principal residents of the east side of the lake, the Coots and Pied-billed Grebes. They are so frequently associated that it seems as if the marks that differentiate them at different ages might have developed through the long periods of that association. As they are about the same size and both look blackish across the water, they need distinguishing marks; and the dusky little boats carry good signals, both fore and aft. The white knife-blade bill of the Coot, which in full face seems almost to divide its physiognomy, is a striking character, but nature as if to make assurance doubly sure has, optically, cut off the tip of the bill of the Grebe by means of the dark band that gives it the name of Pied-bill. The dark area around the bill and the dark chin mark of the Pied-bill seem thrown in for extra measure of contrast to the plain black, velvety head and slaty neck of the Coot. The rear light of the Coot, however, seems the crowning achievement of nature, for at times it suggests, in minature, the white rump patches that the antelope flashes in moments of danger. A good illustration of its directive value came to me one day. Out across the lake was a white spot—was it the head patch of the Ruddy or the white breast of the Western Grebe, I asked myself. Raising the glass, it proved the white under tail coverts of the Coot!

Nature is never satisfied, however. When her work seems done, her aim accomplished, she keeps on adding artistic touches. In this case it is not the exquisitely delicate pen and ink work with which she delights the artistic student of protective coloration, but something more broadly effective—pose. The Coot goes about with long neck craned forward; the squatty Pied-bill nervously lowers its flat snaky head. At too great a distance for any of these points to be noted, the Pied-bill settles the question by rising and showing its white belly, or turning on its side and flashing its white Grebe breast. The young of the Coot and Pied-bill, while markedly different from their parents have easily distinguished characters, for while the young Coot has a plain pale gray neck, the young Pied-bill has the characteristic markings of the downy Grebes—black and white stripes down the neck.

The weak appealing notes of these young were almost always to be heard along the wide tule border of the east shore of the lake; and when, during harvesting, the reaper cut the wheat by the Herons' corner, I was able to get down close to the curve of the shore and look up the irregular tule front with

its secluded by-ways. In this intimate protected harbor, I was pleased to find a mother Pied-bill at home with her downy brood of striped necked chicks, diving and feeding them in assured security. After a time, probably on discovering me, she raised her head and, to my great satisfaction, gave the Cuckoo call—*cluckukukuk*—the identity of which had been perplexing me all summer. It was evidently an alarm note or rallying cry, for in answer to it her brood followed her into the tule waterways, peeping like little chickens. Letting them swim on ahead of her she dived on the near side of a tule screen, coming up on the other side to rejoin them. One of the brood which came out and swam around making a pretty little wake across its bay, had a Robin-like chirp, and as it took note of me gave a droll bob of the head, which proved a family mannerism.

As I watched the interesting family, a muskrat swam by, nose and ears out of water, leaving a long wake behind him. When he had nearly reached the tule wall, he disappeared, and bubbles rose above him. As this was about where the Herons had so mysteriously lit on the water, he had doubtless gone down into a muskrat house. He was seen again the next day, and as he swam past a family of half grown Grebes, they all looked at him, when one inquisitive little Pied-bill swam after him, close to his wake; and as the furry ears disappeared, he too went below, as if to investigate his strange neighbor's house.

The mother of this brood was not feeding them when I saw her, and when one seemed to hint that she should, she preened very pointedly—a way feathered mothers often enforce discipline. They were big enough to provide their own dinners, she must have thought. A parent Pied-bill in diving for food one day apparently met her Waterloo. Shaking her catch violently, she dived rapidly and excitedly, reappearing and diving, and again reappearing and diving. At this juncture two nearly grown young with dull orange bills swam in, one acting as if intending to tell his mother just what to do on the instant; but that apparently was not so easy, for when I last saw the trio they were swimming away through the marsh, nothing settled. Perhaps the old Pied-bill had tried to make way with a squirming mud puppy!

Wherever these small Grebes were seen, Coots were almost always in evidence, and from the road overlooking the eastern border of the lake, they were usually the commonest spots on the surface. From the wide tule border the querulous or appealing notes of young were generally to be heard, and often the crooning note of the old one, one of the pleasantest, most contented sounds that came from the lakes.

The Coots' Gateway, as I came to call an opening through the willows near the hunting lodge end of the road, led down to the tules, and a strip of ground covered with old stalks provided a convenient and popular platform on which the birds could stand to sun and plume themselves. When stopping to look in at the gateway, one day, I caught sight of a young Redhead and got just a glimpse of the mother, in a light that brought out the rare plum colored bloom only occasionally seen in life.

Here, early one August morning, I found four half grown Coots standing at the base of the green tule stalks. When they disappeared, my attention was absorbed by distressed infantile cries coming from within the tules. They decreased after a time and before long a red and black headed nestling Coot appeared through the reeds and climbed up weakly onto the platform, where he

lay down exhausted, crying in the feeble, forlorn little tones to which I had been listening. He was so small and weak that I imagined he had fallen out of his nest and that his first distressed outcry had come from the unexpected plunge.

Where was his mother? A call from an invisible adult made him react sufficiently to take a few toddling steps in its direction; but then, as if his dimly awakened mind lost its grasp, he stopped, fixed his feathers a little, and picked feebly from the ground. Again, when his calls were answered by a *peep*, as from a brother inside the tules, he made a weak run toward the sound, but tripped and went on his bill. Calling forlornly he picked himself up, but then sat down on the ground, too tired to stand, pathetic little chick! Just then a Black-crowned Night Heron rose from a neighboring blind with a loud *squawk*, and two old Coots with their nearly grown young swam out, one of the parents with lake weed in its bill. The sun came out lighting up the yellow bases of the reeds, turning the tule marsh into a miniature green forest, the reflected stems patterning the smooth water and making a most attractive swimming pool. The nestling, creeping out a few feet farther, came near the edge of the pool and I wondered whether he were feeling the ancestral lure of the water or whether, having been so prematurely projected from his nest—granting my surmise to be correct—the dry warm nest still dominated his weak little mind.

At half past nine, after an hour and a half alone in the world, he had nearly stopped calling, and when a motherly *te-tub* came from inside the tules, answered only faintly. He was getting rested, however, and soon went to work to preen his bedraggled plumage. As he combed his short bristly hairs with his red sealing wax bill, his markings came out plainly—his reddish crown encircled by black hairs with whitish hairs beneath. His stringy wings blew out as tiny flippers. But before his toilet could go farther, over he went, almost on his back.

That his mother might get courage to come to him, I moved, a little at a time, farther and farther back among the willows, at each move losing sight of him among the old dead tule stalks on the dark ground, finding him again only by means of his reddish head—of which interesting fact I made note. While I sat watching him through my willow screen, a Yellow Warbler flew down on the platform, looked about jauntily and then flew up clinging to the reeds, hunting for insects or, perhaps, threads for a second nest. A pair of Redwings also flew down to look over the platform for something they wanted. Then a large flock of Ducks passed over head, from one of the eastern lakes, flying on to light down by the Coulee.

Would the mother Coot never come? Was she still brooding the brother nestlings, or was she down on the water feeding them while waiting for me to go? Meanwhile the small Redhead had again been working on his toilet, and though he still looked decidedly hairy, seemed comparatively dry and fluffed out. Just then, losing his balance, he slipped into the water. Before I had time to wonder what he would do, he hurriedly climbed back onto dry land, his mind not yet free from the dry nest. This plunge, however, probably put him in a coming on mood, for it was not so bad as his first plunges, and when, after a little more preening, he slipped into the water again, he settled down on its surface with the ease of long generations of aquatic ancestors, and

swimming off disappeared down a tule lane, calling loudly as if, hidden in their mazes, he was sure of finding the mother who would care for all his wants.

The next time I passed the Coot Gateway, I was hurrying by absent-mindedly and surprised four small Redheads standing on the platform. Was my little friend among them, happily reunited to his family? The mother must have been sitting down resting, for she jumped up and vanished, the four young also disappearing by magic. After that piece of consummate carelessness, creep in as noiselessly as I might, it was all in vain. I had lost a rare opportunity. One pretty sight near the Gateway, though quite aside the mark, was a long row of young dragon flies on a telephone wire.

I often stopped at the Gateway on my way back and forth to our mail box which the crippled carrier, on the return curve of his thirty mile route, passed at intervals varying widely with roads and weather. Coming in sight far up the second angle of the road, following section lines between grain fields, the head of his old white horse could be watched till it reached the box, and then watched disappearing down the highway—a highway that seemed merely an incident, winding down between endless fields of ripening grain. Before the harvest, the fields that had changed from green to gold under my eyes, softened to pale straw color that, as the landscape stretched away, went well with the creamy horizon cloudlets. In one long interval of waiting, when resting in a recess in the wheat with camp stool for pillow, I watched the silky long-bearded wheat softly blowing across the sky till the blue seemed a wondrous blue and the prairie clouds seemed to gather protectingly close.

(*To be continued*)

A SHORT PAPER ON THE HUTTON VIREO

By CLARK C. VAN FLEET

WITHIN the last two years I have made the acquaintance of a new friend among the birds, namely, the Hutton Vireo (*Vireo huttoni huttoni*), to me one of the most interesting of our California songsters. This is a common enough bird in Sonoma County, but one that must be searched for and his acquaintance sought, in order to know him well. His is a quiet, unobstrusive nature, and his olive green coat blends so well with his surroundings that many individuals might be passed, in good territory, by an unobservant person, before gaining a glimpse of one.

The Hutton Vireo is not a bird likely to draw attention to himself. There is no fluttering of wings or hasty glances here and there for food, such as distinguishes the Kinglet; no hammering or pounding and gay chattering or scolding, in the manner of the Plain Titmouse. His sober mantle of olive green is not less subdued than his movement from branch to branch, and tree to tree, his quiet peering under leaves and bark scales, where he takes toll of the teeming insect life. Occasionally a large insect will fall his prey; he will then stop and diligently snip off the wings and legs before attempting to swallow it. Rarely, he will dive forth from the protection of the trees at a passing insect,

very much in the manner of a flycatcher; but on his return to the protection of the green foliage his flycatcher propensities desert him and he usually goes full tilt into the cover rather than show himself longer than necessary.

During the fall and winter this Vireo's liquid note is seldom heard and then but a contented bar or two while feeding. But at the first breaking of winter into spring his notes become more frequent. The nuptial song is a constant repetition of a single note, often for a prolonged period. It is like the twanging of a bow string in one key, *quid, quid, quid,* repeated indefinitely. The above is not an attempt to reproduce the note, as it has more liquid quality and there is a slight cadence in it ranging higher towards the end of the note. In some individuals it is given a slight trill like water over stones. The earliest I have heard their song, if song it could be called, is in the first week of February, and it is to be heard from then on until late summer.

One always associates the Hutton Vireo in his mind with the live oaks. I always think of this little fellow as the spirit of the live oak tree. The tree stationary, unconscious until livened by its spirit, in whose enfolding bosom the spirit lives and dies. If trees can love, how they must cherish the cheery sprite that spends its life in fond protection of their bodies. The body seldom dies and the spirit is constantly renewed, the association is eternal. The spirit wanders but ever returns to its castle, and I can think that nothing would please it better than to die nestled at the foot of its live oak.

About the first and second weeks in March home-building is begun. The site being properly chosen, both birds begin the task. The round, deep-cupped structure is built entirely of Spanish moss, the first strands being woven on both sides of the chosen crotch, with loose ends hanging down; as the building goes on these hanging ends are woven together at the bottom and the nest begins to take shape. As the structure progresses the moss that goes to build it becomes finer and finer and each strand is woven in with a weaving motion of the bill. When the nest will support the weight, each bird, after it has placed the material it has brought, pops in and works with feet and body to round out and cup the structure.

Most of the material for the nest is collected within a radius of thirty-five to fifty yards of the nest, but seldom in the immediate vicinity of the site and never from the same tree. In approaching the nest, usually from two to three stops are made before the last flight direct to the nest. On leaving the birds generally fly direct to a neighboring tree. Building progresses slowly or rapidly, as the weather permits. I noted one pair commence and complete a nest in about four days; normally a week, two, or even a greater length of time is required on account of the frequent showers we have in March and April. Sometimes a few days elapse between the completion of the nest and the depositing of the first egg, but usually the female immediately commences to lay and does so daily until the setting is complete. Incubation is begun at once.

Incubation is performed by both parents, and it is during this period that they are most wary against the detection of their treasures. I have seen one bird dive into the nesting tree, make the change at the nest and the other bird leave, so rapidly, that it seemed as though but the one bird had entered and left the tree. The nest is usually built back from some open or clear space. It is almost useless to look in the first fringe of trees about the clearing; usually the nest is to be found in the second or third row of trees from the opening. The only exception I have ever noted was a nest in a live oak in the middle of

an open pasture. Although the tree was fairly thick, the nest was deserted before an egg was laid. Whether due to my having discovered it, or the result of its position, I have no way of telling. I discovered the nest at a distance of about twenty feet from the tree and did not approach any closer until I returned for the set, when I found the nest deserted.

The nest is placed from seven to twenty-five feet up, and well out at the end of a branch, usually very well concealed. As a matter of fact unless discovered building the nest is almost impossible to locate. On one occasion I discovered a nest by the fact that its occupant, presumably the male, was singing while on the nest. I judge this to be a rather uncommon occurrence. The nest blends so well with its surroundings that sometimes, even though I have formerly located the nest, I have had difficulty in locating it again.

It might be well here to describe one or two nesting sites, to give a fair idea of their normal location. I found one nest, March 13, 1918, by following the building birds. It was located in a small live oak tree about seven feet from the ground. It would have been impossible to have seen it from any angle except directly above, unless led to it by the birds. Fronds of Spanish moss hung all about it, part of one frond being woven into one side of the nest. The nest was on the west side of the tree. Another nest, more usual in location, I found on March 8, 1918, It was about sixteen feet from the ground and about the same distance out from the trunk, near the end of a large branch in a cluster of foliage and moss. An unusual nest was one located in a manzanita bush under a live oak. This nest gave my companion and me a bad hour or two before we located it; we must have passed by it at least three times before it was discovered. This is the only instance that has come under my observation, of the bird building in other than a live oak.

The usual complement of eggs is four, sometimes three, very seldom five. I believe Mr. H. W. Carriger has one set of five taken by Mr. Gurnie Wells in Sonoma County. This is the only set of five I have heard of. The ground color of the egg is pearly white, dotted with reddish brown spots and specks at the larger end. The ground color never varies, but the number and distribution of the spots is seldom alike in any two eggs. In one set of three in my collection, one egg is pure white with very few minute specks on it; the other two have only a few slight markings. In most of the other sets I have, the markings are typical. The eggs vary somewhat in shape and size, some sets being slightly round without being distinctly larger at one end than the other, while others are elongated and larger.

About two weeks after incubation is started the nestlings are hatched and by the time the month is out they are ready to take their first trials of flight. The nestlings are fed by both parents during ther stay in the nest. I watched four fledglings being fed for a period of about an hour; they were visited every five minutes on an average during this period. The nestlings were partially covered with feathers at the time and were keeping the parents very busy filling their hungry mouths.

I have given some study to bird population in this territory and estimate that in associationally good country a hundred breeding pairs to the square mile is a fair average. The area of Sonoma County is fifteen hundred square miles, and of that area about two hundred and fifty are well sprinkled with live oaks. This would give about twenty-five thousand breeding pairs of Hutton Vireos in Sonoma County. I consider this really to be a low estimate. Here

is a large field for the economic ornithologist. For instance, during the two weeks of feeding the young birds in the nest, some seventy to eighty millions of insects must be consumed by these vireos in this county alone, if the parents only work union hours and eat nothing themselves.

The nest is kept scrupulously clean by the parent birds during the period of incubation and later during the time the young birds are in the nest; and as the nest is strongly anchored to green wood and deeply cupped the danger of accident or disease is reduced to a minimum. The nests are invariably so well concealed that a marauding jay or squirrel has little chance of discovering it, unless by accident. In fact I have never found but one raided nest. After the first egg is laid it would be hard to drive the birds from the nest; but one's observations during building operations should be most discreet as the birds will surely desert if they suspect an intruder.

The Hutton Vireo can well be called one of the quietest of our native birds; for, although fairly common in country acceptable to him, his habits and dress combine to make him very little known to the average bird hunter. Therefore I have attempted in this paper to throw a little light on his home and surroundings.

Santa Rosa, California, March 23, 1919.

AUTOBIOGRAPHICAL NOTES

By HENRY WETHERBEE HENSHAW

(*Continued from page 107*)

TRIP TO LOUISIANA

IN 1869, a few months before the examination for Harvard, my health gave away, as indeed it had done several times before with loss of school time, and I postponed for the time entering college. In the fall of the year I was made happy by receiving an invitation from Captain Frank Webber to spend the winter in Louisiana on board the Coast Survey schooner "Varina". I sailed from Boston for New Orleans early in December, and had my first experience of a real gale at sea when off Cape Hatteras where I lost, among other things, four days out of the calendar. None the worse for my experience of one of Neptune's moods, I reached New Orleans in due time, and passed the next ten days or so in that delightful southern city. Embarking on the "Varina" about the middle of the month, we tacked leisurely down the broad expanse of the Father of Waters till we were in the Pass á Loutre, one of the five passes through which the muddy waters of the giant stream find their way into the Gulf, when about noon, when visions of lunch were uppermost in my mind, we ran upon a hidden snag, which stove a big hole in the schooner's bottom. Hasty efforts to plug the break proving unavailing, the vessel was run ashore and abandoned, though not until all our effects and the ship's stores were landed in the boats and the little steam launch. We found cordial welcome and shelter in a small fishing settlement on the banks of the pass, and I remember

that afternoon when exploring the neighborhood, noting among the thick marsh vegetation some Maryland Yellow-throats, Palm Warblers, and other birds. Little did I think, as I scanned this wilderness of reeds, that nearly forty years afterwards, as Chief of the Biological Survey, I should be called upon to administer this and other similar tracts in the neighborhood as a Federal Bird Reservation, which was set apart August 8, 1907, under the name of the "Tern Islands".

That night, as guest, I was favored with a bed improvised on top of a billiard table, while the other members of the party slept, as best they could, on the floor. The next day the ship-wrecked party was taken aboard the light-house tender "Essayons", commanded by Captain Freeman, which chanced to be on her way to New Orleans. Thus we were back in the hospitable city the same week we had left it. If I remember rightly, it was just ten days later when we sailed by the scene of our former ship-wreck in the "Varina", which, meantime, had been raised, towed to New Orleans, repaired, and made as good as ever. This time we sailed triumphantly through the pass into the Gulf, and in due time reached the scene of our winter's labors. Captain Webber and his wife proved the most delightful and sympathetic of hosts, and as the others of the party were pleasant and congenial comrades the winter was most agreeably spent.

The work of the Survey party, of which Captain Webber was in charge, lay chiefly in and around Lakes Borgne and Ponchartrain, and I had lively anticipations of the feathered treasures in store for me in this entirely new field. As, however, the territory bordering the lakes consisted almost entirely of marshes, the variety of bird life proved very small. Such as it was, however, I devoted myself to it enthusiastically, and in spring carried home something over two hundred skins, among which were the types of *Rallus saturatus*, which abounded in the marshes about the Rigolets Light House. In the absence of inviting collecting ground, I devoted a good deal of time that winter to hunting ducks, geese and snipe, and the spoils gathered in this way always proved a welcome addition to our mess. The canoe trips after ducks in the tortuous bayous of the lake region with Mr. Schonstein, the keeper of the light house, will always remain delightful memories.

BACK FROM LOUISIANA

I returned home in the spring of 1870 greatly improved in health, but presently gave up all idea of a college course. Then followed a delightful interim of months when, without much thought of the morrow and its responsibilities, I devoted most of the time, in company with Brewster, wholly to outdoor life and to collecting birds.

EVENTS LEADING TO FOUNDING OF THE NUTTALL ORNITHOLOGICAL CLUB

It is surprising how trivial incidents may lead to important and unforeseen consequences. Mr. Brewster possessed a copy of the octavo edition of Audubon's "Birds", and the discoveries and experiences of this pioneer of American ornithology often formed the topic of our conversation, especially when his account of species familiar to us differed from our own experiences. As I was less acquainted with the writings of Audubon than he was, and desired to become more familiar with them, in the fall of 1871 I suggested the plan of reading aloud a chapter of Audubon and then discussing it. The plan soon becoming known to Ruthven Deane, Henry Purdie, and, later, to W. E. D. Scott

and Ernest Ingersoll, they joined us around the cozy winter fire in Brewster's house, and many pleasant and profitable evenings were thus spent. Soon others expressed a desire to join the little circle, and from this small beginning was born in due time the Nuttall Ornithological Club. The first issue of its bulletin appeared in 1876, with J. A. Allen and Elliott Coues as assistant editors.

The choice of a name for the club was a happy one, for, although Thomas Nuttall was much more of a botanist than an ornithologist, he lived for a decade in Cambridge, wrote his "Manual of the Ornithology of the United States and Canada" there, and doubtless many of the original observations recorded in it were made in the Cambridge region.[1]

THE AMERICAN ORNITHOLOGISTS' UNION, BIOLOGICAL SURVEY, AND NATIONAL AUDUBON SOCIETY

Perhaps it is not too much to say that as a natural sequence of the formation of the Nuttall Club and the publication of its bulletin there sprung into existence in the fullness of time, the American Ornithologists' Union, founded September 26, 1883, and its journal "The Auk" which has had more potent influence in shaping the trend of American Ornithology than all other agencies combined.

Still another important consequence followed in the wake of the N. O. C., though in nowise directly connected with it. At the first meeting of the Union one of the committees appointed was "On the Status of the English Sparrow", and in 1885, Congress made a small appropriation to carry on the investigation in connection with the Agricultural Department. This was the beginning of the "Division of Economic Ornithology" which later, under the able management of Doctor C. Hart Merriam, grew into the Bureau of Biological Survey.

The first meeting of the Union was pregnant with still further important consequences. The Committee on the Protection of North American Birds then appointed did yeoman's service for several years, and then, largely due to the enthusiasm and leadership of William Dutcher, grew into the National Association of Audubon Societies which, with its Model Bird Law, has exerted a very powerful influence in this country for the protection of Citizen Bird.

MEETING WITH W. E. D. SCOTT

In the fall of 1870 I was collecting birds one day on the Cooledge Farm, back of Mount Auburn—a locality no doubt familiar to Nuttall in his day and for several years a favorite collecting ground of Brewster and myself—when I heard the report of a collecting gun, and investigation soon revealed a young fellow slowly limping his way through the trees, gun in one hand and cane in the other. Accosting him, I found he was W. E. D. Scott, then taking a scientific course at Harvard. He came to be an excellent naturalist and a successful and indefatigable bird collector despite his disability, which would have proved an insuperable obstacle to anyone not possessed of more than ordinary courage and enthusiasm. Later he became one of the founders of the Nuttall Ornithological Club.

MEET ISAAC SPRAGUE

In the fall of 1870 my father moved to Grantville, now Wellesley Hills, the region around which proved to be very inviting to the lover of outdoor life. Soon after, I made the acquaintance of Isaac Sprague, then living on the outskirts of the town, who not only had known Audubon when a young man but had accompanied him on his Missouri River trip in 1843 to aid the veteran or-

[1]For an interesting account of Nuttall and his activities the reader is referred to William Brewster's "Birds of the Cambridge Region of Massachusetts, 1906".

nithologist by his skill with the pencil. He showed me a good many drawings of birds made in his early days, and I particularly remember a spirited pencil sketch of Audubon which hung on the wall of the parlor. This, he said, Audubon, years before, pronounced the best likeness of himself extant, and, taking a pencil in hand, made a few strokes which he thought improved it. This sketch was made in 1842, and was reproduced in volume II, p. 84, of "Audubon and his Journals", which appeared in 1897. I find it referred to also in Herrick's "Audubon the Naturalist", vol. II, being no. 16 on the author's list of "authentic likenesses".

When I met Mr. Sprague he was making drawings of plants for Doctor Asa Gray to illustrate his "Manual" and other botanical works. Gray, who highly valued his work, pronounced him the foremost of living botanical artists. Though Mr. Sprague had long ceased the active study of birds, he was still much interested in them, and occasionally accompanied me in short tramps through the woods adjoining his house. He had never chanced to see a Prairie Warbler, and was greatly pleased when I took him to a nest I had found, when he heard for the first time the song of the bird. Though he had ceased to draw birds, he subsequently made a study of a quail for Mr. Brewster and of a ruffed grouse for me—perhaps the last bird studies he ever made, and excellent examples of his accurate and painstaking methods.

BRADFORD TORREY

It must have been considerably later than this that Bradford Torrey took up his residence in Wellesley Hills, where he lived till towards the closing years of his life when, as is well known, he moved to California. During my annual visits home I frequently met Torrey, and we had some pleasant tramps together over the Wellesley hills. Though by no means unsociable he was not over easy to become acquainted with, owing to a certain diffidence and shyness which tended to limit the number of his close comrades. The slight barriers to his friendship once overcome, he was a delightful companion and a faithful friend. He was an indefatigable student of bird life and an accurate and painstaking observer, and his notebooks are full of interesting observations which, for one reason and another, he was unable to fix definitely upon a given species and he was willing to take nothing for granted. His sketches of the habits of birds and of outdoor life, which have endeared him to thousands of readers, are told in a singularly felicitous manner and with a skilled literary touch peculiarly his own.

TRIP TO FLORIDA

On October 29, 1870, I sailed for Savannah en route to Florida on a bird collecting trip. The peninsula was then comparatively unknown to naturalists and to me was a land of mystery and romance, rich in ornithological possibilities and redolent with memories of Audubon's trip in 1831. Our party consisted of Mr. Maynard and his bride, Mr. E. L. Weeks, an artist who subsequently attained to fame as a painter of oriental subjects, and myself. We sailed from Boston October 29, 1870, and were in such haste to reach the promised land that we stopped in Savannah, then a quaint southern city, only a day, most of which was spent in a walk out to San Buenaventura Cemetery, and I still retain a vivid impression of its avenues of wonderful live oaks festooned with long streamers of grey moss (*Tillandsia*).

CEDAR KEYS, FLORIDA

Our first stop to collect, November 6, was at Cedar Keys, on the west coast of the peninsula, which we reached by train from Baldwin on the direct line to Jacksonville. The island not proving a very desirable collecting ground, Mr. Maynard and his wife took the steamer to Key West on a prospecting trip, while I continued to collect birds about Cedar Keys, and Mr. Weeks continued to sketch. After a few days I made the acquaintance of the engineer of a construction train which made daily trips out into the pine barrens and hummocks of the mainland, and this proved most fortunate. By making use of the train, through the courtesy of the engineer, I was enabled to secure many desirable birds, including a number of one species I was never to see again in its native haunts, the Carolina Paroquet, the subsequent extinction of which curious and beautiful species must cause a pang of regret in the heart of every true bird lover.

While in Cedar Keys we experienced a "norther" which in the almost fireless condition of the town afforded a more accurate idea of life in the polar regions than I have ever known since. Much of the less hardy vegetation on the island was frost-killed, and, although the temperature of the coastwise waters was lowered only a few degrees, vast numbers of fish were killed and cast up on the beach.

January 2, the party was reunited at Key West, which had proved very unremunerative collecting ground. Upon the strength of information obtained by Mr. Maynard we took passage on a sponger, "The Explorer", and, after four delightful days among the Keys, in which the plankton of the Gulf Stream revealed some of its wonders, we found ourselves at Miami, which was to prove our headquarters for several months.

REACH MIAMI ON THE EAST COAST

Miami was then but a wilderness, and where today is a populous winter resort, then there were only two or three houses on the south bank of the river, and none at all on the north bank, save what remained of the officers' quarters and barracks, relics of the government buildings that dated back to the days of the second Seminole war (1835). Major J. V. Harris, a native of Mississippi, who had served in the Confederate Army during the Civil War, was in possession of the north bank of the river, and he and his wife lived in the most easterly of the old quarters, while we rented from him the other two.

Between its hummocks and its surrounding pine woods, Miami proved inviting territory, and we collected birds with such ardor and success that I have never thought of the place since without experiencing symptoms of that emotion, not overcommon among bird collectors, remorse. It was with much pleasure, therefore, that I read Bradford Torrey's account of his stay in the place many years later, from which it appears that Nature in her own good time set about repairing the damage we had done in our efforts to secure "good series" of the birds of the locality. Torrey's list shows that few if any of the species we found there are now missing, while not a few species not present in our time have come in as the result of changed conditions, as the presence of gardens, parks, and imported tropical vegetation.

THE EVERGLADES

We extended our researches across Biscayne Bay to the ocean beach, and up the Miami to the Everglades by means of a row-boat, which, in addition to

many other kindnesses, Major Harris placed at our disposal. However, we got no farther than a short distance beyond the portals of the Everglades, which at that point we found to be little else but a sea of tall canes and grasses, studded here and there with islets clothed with cypress and other sub-tropical vegetation. The tortuous channels by which they were traversed were too narrow and shallow for the passage of a boat, and were navigable only by the light canoe of the Indian. Here we were introduced to that hawk of anomalous mollusk-eating habits, the Everglade Kite or "snailhawk", an excellent account of which with its nest and eggs is to be found in Maynard's "Birds of Eastern North America", 1881, p. 284. Here also we heard for the first time the scream of the cougar, a few of which lurked in these swampy fastnesses to prey upon the deer which were still fairly numerous.

LIFE AT MIAMI

The Seminole Indians from their settlements in the Everglades frequently visited us at Miami, bringing venison and delicious sweet potatoes, which we were always glad to buy, for, to tell the truth, Weeks and I, who messed by ourselves (mess is exactly the right word), fared none too sumptuously. True there was some small game in the woods, quail and rabbits, and schools of fish played in the bay before our eyes, but both of us were busy from morning to night at our self-imposed tasks, and begrudged every moment we spent in attempts to replenish our larder. We took turns cooking—Heaven save the mark!—and as each of us soon became expert at making flapjacks we lived principally upon that delicacy, made palatable with molasses syrup, which we found, somewhat to our surprise, quite capable of sustaining human life. From that day to this the flapjack has ceased to be an object of interest to me.

Perhaps the most notable bird we found at or near Miami was the little grassquit (*Phonipara zena*), now known as *Tiaris bicolor*, a straggler from the Bahamas, of which I took a single specimen January 19, 1871.[2] We also secured the nest and eggs of the Everglade Kite in a magnolia bush on March 24. But we obtained fine series of many southern species, which well illustrated the avifauna of the region, and certain of which have since been described as new by one and another author. Most of the specimens collected on the trip found a permanent abiding place in the Museum of Comparative Zoology, or the Agassiz Museum, as it was generally known in those days.

Mr. Maynard and his wife left April 2 on a sailing yacht for a collecting cruise through the Keys to Key West, while I remained in Miami till the end of May when I returned home by way of Key West and New York.

I never published any notes upon the results of my Florida trip, but in Maynard's "Birds of Florida", three parts only of which were issued, and in his "Birds of Florida with the Water and Game Birds of Eastern North America", of which 9 parts were published; and finally in his "Birds of Eastern North America", the reader will find much valuable information and many interesting details of the habits of Florida birds. These were gathered by this indefatigable naturalist, not only on the '70-'71 trip with me, but during several other seasons when he explored different parts of the peninsula, in which work he was one of the pioneers.

[2]This bird is figured on the Lantana on which it was shot in Maynard's "Birds of Eastern North America", 1881, pl. II, p. 328.

FIRST SPECIMEN OF BAIRD'S SANDPIPER COLLECTED IN THE EAST

Meantime my own collection of local birds was growing apace, and it was about this time (August 27, 1870) that I took a specimen of Baird's Sandpiper on Long Island, Boston Harbor, the first ever known to occur east of the Mississippi. This specimen proved something of a puzzle to Brewster and myself, and eventually led us to the Agassiz Museum and to J. A. Allen, then Curator of its bird and mammal collection. He very soon verified our identification, and we speedily came to know him very well. If I mistake not he was then at work on his "Mammals and Birds of East Florida", an epoch-making book, which appeared in the following April. Subsequently, at the request of Dr. Coues, I sent the sandpiper to Washington for examination, and in this way, perhaps, became known, by name at least, to Professor Baird, Dr. Coues, and Mr. Ridgway.

ACQUAINTANCE WITH DOCTOR T. M. BREWER

It must have been about this time, too, that I became acquainted with Doctor Brewer, then well-known in Boston as a publisher and book dealer. Though possessing a somewhat peppery disposition, he was a most kind and courteous gentleman, and was particularly fond of young people, and ever ready to lend a helping hand or speak a word of cheer to the aspiring young ornithologist. He came to my house to see some of my treasures, particularly a set of Sharp-tailed finch's eggs taken in Cambridge on the Charles River marshes, and more than once invited Brewster and myself to his house where we examined with pleasure his large collection of eggs. This he willed to the Agassiz Museum.

It was somewhat later than this—I do not recall the exact year—that through him I was offered the position, then vacant, of Secretary of the Boston Society of Natural History. This I declined, not liking the confinement of an indoor position.

In my mind Dr. Brewer was the living link connecting Audubon with our own times, and he often spoke of the pioneer ornithologist and of his acquaintance with him. Dr. Brewer knew Professor Baird intimately, and it was, perhaps, largely through him that I became known in Washington as a "promising young bird collector". Later, when I became attached to the Wheeler Survey, he always called at my office when visiting Washington and examined with great interest my bird and egg collections from the west. He died in 1880.

(*To be continued*)

FROM FIELD AND STUDY

Correction of Impression.—I have found that at least one person regards the last paragraph of my "Trinomials and Current Practice" Communication in the last CONDOR (XXI, 1919, p. 92), in which I deplore the attitude of certain "quasi-ornithologists", as embodying my personal opinion of Mr. P. A. Taverner. As one has thought this, others undoubtedly will; but such a possibility never entered my head. I have the greatest respect for Mr. Taverner as a man and as an ornithologist, and would not dream of trying to belittle him. I added the last paragraph merely to condense two of my ideas into one communication, and meant exactly what I tried to imply—that I have no patience with those who give all their time and attention to eggs, butterflies or big-game hunting, and yet indulge in a mighty outburst of lamentation whenever a new bird is described.—A. B. HOWELL, *Covina, California, April 21, 1919.*

Notes on Some Catalina Island Birds.—On reviewing Mr. A. B. Howell's paper, "Birds of the Islands off the Coast of Southern California", in connection with observa-

tions made by the writer on Catalina Island during the first seventeen days of March, 1919, it has been thought that the following notes might be worth recording. Unfortunately permission was not had to do any shooting on the island, and specimens could not be taken. The subspecific identity of four of the following birds has therefore not been established.

At least one, and probably two, Sparrow Hawks (*Falco sparverius* subsp.) were seen on numerous occasions about Avalon and on the terraces overlooking the town, and on March 9, three of these birds were seen on a ten-mile walk toward the upper end of the island. On this same walk, about five miles from the town, a Pigeon Hawk (*Falco columbarius* subsp.) was seen at close range.

The Sapsucker whose work is so much in evidence on the trees in and about Avalon was caught at his drilling on two occasions, both within the town itself, on the 15th and 16th respectively, and proved to be the Red-breasted (*Sphyrapicus ruber ruber*).

On the 10th a flock of perhaps twenty Juncos (*Junco hyemalis* subsp.) was noted high up the slopes back of the town in a very brushy place where the going was bad. The birds were positively identified as Juncos, but a close enough view was not had to warrant even a guess as to the form.

A Hermit Thrush, supposedly the Alaska (*Hylocichla guttata guttata*), was everywhere common, from the beach to the top of the ridge, and no place on the island was visited where these birds could not be found scattered about in numbers. They were by far the most numerous land-bird observed during the entire seventeen days.

Three Western Robins (*Planesticus migratorius propinquus*) were seen on the 6th in the orchard of John Brinkley (Chicken John), whose attention was called to them and who stated that in a twenty-eight year's residence on the spot he had not before noticed the bird. Two residents of Avalon reported Robins in their door-yards on the same day, and remarked on the unusualness of seeing Robins on Catalina.

A scattered flock of between thirty and forty Western Bluebirds (*Sialia mexicana occidentalis*) was under observation from March 5 to 10 on the beautiful golf course back of the town. These birds also proved to be curiosities to some of the natives. A Sharp-shinned Hawk was seen to attack this flock repeatedly. The Bluebirds apparently left during the night of the 10th, as they were searched for over the entire lower end of the island and none was met with after that date.—Harry Harris, *Kansas City, Missouri, April 18, 1919.*

Notes from Southern California.—Additional records of the Baird Sandpiper (*Pisobia bairdi*): September 10, 1918, I found two of these birds on the beach near Del Rey, Los Angeles County. One, a female, was secured. More than three weeks later, on October 4, a lone male was taken in the same immediate locality. Was this mere coincidence, or is it fresh material for the mated-for-life theorists? The rarity of the species on this coast, and the circumstances under which these birds were taken, certainly suggest a mated pair, of which, one being killed, the remaining bird lingered in the same locality until it, also, was collected.

Lewis Woodpecker (*Asyndesmus lewisi*) in the San Bernardino Mountains: One taken on Deep Creek, and one at Big Bear Lake, September 19 and 22, respectively, 1918. Likely the species is of regular occurrence in these mountains, but I know of no published records.

White-throated Sparrow (*Zonotrichia albicollis*): A bird of this species came regularly to a feeding-table at the home of Mrs. W. H. Martz, 5166 Hollywood Blvd., Los Angeles, where I examined it leisurely at a distance of about twenty feet. It was first noted late in November, 1918, and seen almost daily until some time during the following February, always in company with a flock of Gambel Sparrows, which never allowed the other to feed until they were sated.

Cliff Swallow (*Petrochelidon lunifrons*) and Phainopepla (*Phainopepla nitens*) on Santa Catalina Island: A flock of about twenty Cliff Swallows was noted on May 12, 1918. This, I believe, constitutes the first record for the Island. The Phainopepla was seen on the 14th of the same month, this record being the earliest but not the first published one of the species.

Baird Cormorant (*Phalacrocorax pelagicus resplendens*): A dead bird on the beach near Hyperion, January 6, 1919, is the only one of the species I have found during

five years of beach work. Other collectors state they have never seen it in this locality; hence the record seems worthy of publication.

Little Brown Crane (*Grus canadensis*): A specimen shot at dusk on January 31, 1918, near Los Angeles, by a hunter who mistook it for a goose, was presented to this Museum, where it was mounted and placed on exhibition.

Marbled Godwit (*Limosa fedoa*): A winter record, January 6, 1919, appears unique. The bird was seen from a car window, near Del Rey; but no mistake could have been made in identification.

A cripples' convention: While bird-looking on the beach January 1, 1919, near Hermosa Beach, I noted a flock of Sanderling (*Calidris leucophaea*) that acted peculiarly. By working carefully along at some distance from the water, the birds were induced to string out in a line near the water's edge and passed me in that formation, eight of them running and *fourteen hopping*, and close inspection with a glass showed that fourteen of that flock were one-legged. Less than 200 feet farther up the beach were six Knots (*Tringa canutus*) (note the winter record) of which two were "hoppers"; while close beside them, farther from the water, was a flock of seventeen Snowy Plover (*Aegialitis nivosa*) of which not less than five were one-legged. It would seem natural that birds of one species, crippled and unable to compete on even terms with their normal fellows, should flock together to some extent; but such a percentage of cripples, of three species, and the proximity of the different groups of cripples, is interesting, to say the least.—L. E. Wyman, *Museum of History, Science and Art, Los Angeles, June 14, 1919.*

The MacFarlane Screech Owl in California.—Through an oversight there was omitted from the 1915 California state list of birds a race of screech owl fully entitled to have been included. This was the MacFarlane Screech Owl, *Otus asio macfarlanei* (Brewster), the claims to which as a bird of California were clearly set forth by Mr. Robert Ridgway in 1914 (Birds of North and Middle America, Part vi, pp. 697-698). He gives the range of this owl as including "northeastern California (Fort Crook; Baird, Shasta County?)". The evidence for its occurrence at Baird remains questionable, but for Fort Crook, which is near Burgettville in extreme northeastern Shasta County, there is a specimen in the United States National Museum.

Through the kind offices of Dr. Chas. W. Richmond, Associate Curator of Birds in the National Museum, the undersigned has been privileged to examine this Fort Crook specimen. It is no. 16027, U. S. Nat. Mus., male, taken by John Feilner (probably in 1860), and is in apparently as good state of preservation as if it were taken last year instead of nearly sixty years ago. The present writer has made comparisons between this bird and *macfarlanei* from eastern Washington, without detecting differences of any seeming consequence. Larger size, greater extent of blackish markings on the contour feathers generally, and the browner tone of color dorsally, serve to distinguish it from any specimen of the more southern California races, *bendirei*, *quercinus* and *gilmani*.

The Fort Crook bird, having been in existence so long, has been commented upon by a number of writers before Ridgway announced its status in positive terms. Brewster (Bull. Nutt. Orn. Club, vii, 1882, p. 32) considered it an intergrade between *bendirei* and *kennicotti*; Townsend (Proc. U. S. Nat. Mus., x, 1887, p. 203) placed it under the name "*kennicottii*?"; Brewster (*Auk*, viii, 1891, p. 143) thought it "about intermediate" between *bendirei* and *macfarlanei*; and Hasbrouck (*Auk*, x, 1893, p. 256) put it under *bendirei*.

Collectors visiting the Modoc region of extreme northeastern California should keep special lookout for the Macfarlane Screech Owl. It ought to be common there locally, even though but one California-taken specimen seems as yet to be contained in any museum.—J. Grinnell, *Museum of Vertebrate Zoology, Berkeley, California, April 18, 1919.*

A Breeding Record for the Red-headed Woodpecker in New Mexico.—On Monday, June 16, while making a trip about five miles south of Albuquerque in company with S. E. Piper and J. S. Ligon, of the U. S. Biological Survey, we saw a Red-headed Woodpecker (*Melanerpes erythrocephalus*) enter a hole in a dead cottonwood tree. An examination showed the hole to contain young birds, probably about ten days old. Both adults were observed a few minutes later carrying food to the young, and on passing the same place about dark one of the old birds was found on the nest. As nearly as I am aware

this is the first breeding record for this species in New Mexico with the exception of the one noted by Mr. Ligon below.

The Red-headed Woodpecker has been observed in New Mexico apparently with increasing frequency since 1915. I find in my records the following notes on the occurrence of this species:

1 adult bird, Albuquerque, June 7 and 8, 1915.
1 adult, Roswell, Feb. 12, 1916.
1 adult, 4 miles north of Albuquerque, Aug. 18, 1918.
1 adult, in same locality as the nest above described, May 25, 1919.

Mr. J. S. Ligon, of the U. S. Biological Survey, supplies the following notes from his records:

July, 1915, nesting at Ft. Sumner, New Mexico.
Sept. 9, 1916, 1 adult, South Spring River, Roswell, New Mexico.
Sept. 4, 1917, 1 adult, Los Lunas, New Mexico.
Aug. 28, 5 adults observed between LaJoya and Isleta, on the Rio Grande, New Mexico.
May 27, 1919, 1 adult, at White Tail, Sacramento Mts., New Mexico.

In a previous issue of THE CONDOR, I have advanced the theory that the Red-headed Woodpecker is invading New Mexico by way of the telephone poles along the transcontinental railway lines. In support of this theory it is interesting to note that all the observations listed above were on or near railway lines.—ALDO LEOPOLD, *Albuquerque, New Mexico, June 17, 1919.*

EDITORIAL NOTES AND NEWS

The *Second Ten Year Index to The Condor* will probably be off the press by the time this issue of THE CONDOR reaches our readers. No pains have been spared by its compiler, Mr. J. R. Pemberton, to make this index serviceable in every feasible way. The user will not only be able to find his way to the extensive literature contained in volumes XI to XX by *species* (under all the different names employed for each), but will also be guided on the basis of subject matter, geography, and authors. Needless to say every CONDOR subscriber and Cooper Club member should possess himself at once of a copy of this Index (Avifauna No. 13). Applications should be made to the Club business manager, W. LEE CHAMBERS, *Eagle Rock, California.*

About the most thoroughly satisfying book we have yet seen on the birds of any one country is the work now appearing from the press of Witherby & Co., 326 High Holborn, London, entitled "A Practical Handbook of British Birds." No less than six experienced students of British birds are collaborating in the production of the work, each attending to some special portion of the matter relating to each species. Dr. Ernst Hartert is handling the nomenclature and keys; Mr. H. F. Witherby furnishes part of the descriptions and diagnoses, and Miss Annie C. Jackson, part; the field characters are drawn up for the most part by Mr. C. Oldham; Mr. Norman F. Ticehurst traces the migrations of the birds; and the Rev. F. C. R. Jourdain deals with their food and breeding habits. Here is a demonstration of the higher plane of output which is bound to be reached through organized cooperative effort. The three parts of the work which have so far appeared, comprising over two hundred pages and several excellent plates, respond to our scrutiny as well-nigh ideal, as regards both method of treatment and content. Of course our British friends have many more years of ornithological history to draw from, as well as the records of many more observers, than we of western North America have. Any approach to the completeness shown by their work would as yet be impossible here. Many, many years of conscientious gathering and recording of facts yet remain to be done before west-Americans can hope to put through so complete a "practical handbook" of our birds.

Dr. Witmer Stone, Curator of the Philadelphia Academy and Editor of *The Auk*, has spent the early summer in the Chiricahua Mountains, southeastern Arizona. Botany as well as Ornithology received his attention, though we have an idea the main object of the trip was a thorough rest; for Dr. Stone is a prodigious worker and has but rarely allowed himself a vacation. Mrs. Stone "came along too"; and Mr. and Mrs. J. Eugene Law are of the party. Mr. Alex-

ander Wetmore is reported to have dropped into camp for the first week of June. That is an unusual concentration of keen ornithologists, so let us watch now for new records from Arizona!

Mr. and Mrs. A. Brazier Howell and daughter are touring northern California and Oregon this summer, visiting the type localities of certain desirable birds and mammals. An ingeniously and compactly equipped "Buick" contributes wonderfully to bringing the desired results.

Halsted G. White and Richard M. Hunt are spending the summer in field work in the Santa Lucia Mountains of southern Monterey County, California—this in the interests of the California Museum of Vertebrate Zoology.

Mr. Laurence Huey is doing field work with the birds of the northern Sierra Nevada in the interests of Mr. Donald R. Dickey of Pasadena. Photographs of nesting birds constitute an important portion of the output.

Mr. F. C. Lincoln, Curator of the department of ornithology of the Colorado Museum of Natural History, is now mustered out of the army, in which he served in the pigeon section of the Signal Corps. He has lately given a number of lectures in Denver on "The Military Use of the Homing Pigeon" and has in preparation an article on the same subject, to appear in due time in some natural history journal.

Addition to Military Service Record: PARMENTER, Henry E., Commander, U. S. Navy, Retired, Twelfth Naval District, San Francisco, California. Assistant Commandant of District since May, 1917.

Leo Wiley, a member of the Cooper Ornithological Club since 1915, died at Shandon, California, October 31, 1918, a victim of the influenza epidemic. He was born at Silverton, Colorado, September 20, 1890, and was the only son of A. P. Wiley, who now resides at Palo Verde, Imperial County, California. It was at this place, in 1910, that Leo Wiley got in touch with some visiting ornithologists, and thereafter his interest in birds led to a number of brief but valuable contributions to the columns of THE CONDOR. Many specimens taken by him have come into the possession of the Museum of Vertebrate Zoology; and now, through gift from his father, the balance of his collection of birds has gone to the same institution.

As bearing further upon the problem of ducks versus rice in the Sacramento Valley, California (see page 89 of our March issue), it is proper to state that the United States Department of Agriculture will now, upon application, issue a blanket permit allowing growers, members of their immediate families, and bona fide employees to "herd" ducks from the rice fields between September 15 and October 15 and to utilize for food any birds killed in the process. Such birds may also be shipped to charitable institutions if properly marked. After the season opened last fall permits were granted to rice growers to herd at night so as to allow protection of the harvested rice during moonlight nights. As might have been expected, the demand for an earlier opening of the season and promiscuous hunting came from hunters in the towns, and not from the rice growers themselves, who in reality oppose open shooting. Retrieving ducks in growing rice would cause greater damage than the ducks cause. It is obvious that here, as with so many other economic problems arising in the course of adjustment of natural conditions to human settlement, the first need is for the careful ascertainment of the facts. There often prove to be no valid grounds for conflict of interests; when there are real grounds, then some fair solution is likely to present itself to the persons who study the situation disinterestedly. The coming harvest season should find all interests well cared for, thanks to the attention given the matter by our Government through the Bureau of Biological Survey, Department of Agriculture.

The Museum of Vertebrate Zoology of the University of California has again undertaken field work in Alaska, and a party to work in that region left the Museum on May 14, to be gone until October 1. The route for the present season lies in southeastern Alaska in the vicinity of Wrangell. It follows up the Stikine River from the sea eastwardly into the interior to the vicinity of Telegraph Creek, British Columbia. The purpose of the work is to gather specimens and all sorts of natural history information concerning the birds and mammals of the section traversed, particularly in order to learn how the fauna of the relatively arid interior differs from that of the humid coast belt; also as to what happens where the two faunas meet. Several seasons of work in the same general region have brought together large collections from adjacent sections and these have already been reported upon in a series of papers published from the University of California Press; so that the new material will be gathered and interpreted upon a more advantageous basis than would otherwise be possible. The present year's field work is in charge of Mr. Harry S. Swarth, Curator of Birds in the Museum, and he will be assisted by Mr. Joseph Dixon, Economic Mammalogist, as also by local hunters. This opportunity of the Museum of Vertebrate Zoology to resume its field

work in southeastern Alaska is due to the special interest of Miss Annie M. Alexander, and is in accordance with the general plan adopted by her some years ago, namely to contribute to a more complete knowledge of the vertebrate fauna of the Pacific coast of North America. As heretofore, all of the field notes, photographs and specimens become at once the property of the University of California.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

APRIL.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, on the evening of April 17, 1919, at eight o'clock. Dr. Evermann was in the chair and others present were: Messrs. Cox, Grinnell, Hunt, Kibbe, Lastreto, Palmer, Swarth; Mesdames Allen, Hayes, Kibbe, Meade, Schlesinger, and Wythe. Visitors present were Miss Barnard, Miss Cassidy, Mrs. Evermann, Miss Johnson, Miss Keeler, Mrs. Swarth, Mrs. Wheeler, and Miss Wythe.

The minutes of the March meeting were read and approved, and records of the meetings held by the Southern Division in February and March were read. Mr. F. N. Bassett and Mrs. Flora C. Hayes were elected to membership, and the name of B. C. Bell, 235 Eighth St., San Francisco, was proposed by Mr. A. S. Kibbe. Eleven other names were added from the minutes of the Southern Division. The programs for two symposia to be held at the June meeting of the Pacific Division of the A. A. A. S. were read by the secretary, also the Resolution of Sympathy drawn up by the committee to be forwarded to the relatives of Mr. Malcolm P. Anderson.

Further depredations upon the water birds of the Farallon Islands, caused by the presence of oil on the water in that region, were reported by Mr. Lastreto. The Club adopted the Committee of the Audubon Association of the Pacific, who are making an earnest effort to put a stop to the pumping of oily ballast-water from returning tankers. The committee consists of Mr. Lastreto, President of the Audubon Association, and Dr. Evermann, President of the Northern Division of the Cooper Club.

Miss Margaret W. Wythe then read a very carefully prepared paper on "Bird-Study as a Part of School Nature-study". this was discussed by several members of the Club especially interested in educational problems. Adjourned.—AMELIA S. ALLEN, *Secretary.*

MAY.—The regular monthly meeting of the Northern Division of the Cooper Club was held at the Museum of Vertebrate Zoology on the evening of May 17, 1919, at eight o'clock. In the absence of Dr. Evermann, Mr. Lastreto presided. The members present were: Messrs. Bryant, Hall, Hunt, Lastreto, Trenor, and Wright; Mesdames Allen, Cole, Ferguson, Griffin, and Miss Elizabeth Ferguson. Visitors present were Mr. Cole, Mr. Cook and Miss Miller.

The minutes of the preceding meeting were read and approved. Mr. B. C. Bell was elected to membership and eleven names which had been forwarded by the Southern Division were approved. Professor Harold Heath of Stanford University was nominated for membership by Dr. Grinnell. A letter from Professor Melville B. Anderson acknowledging the resolutions adopted by the Club with reference to the death of Mr. Malcolm Playfair Anderson was read by the Secretary.

A talk on "Some Experiences with Aviary Birds" by Mr. Curtis Wright, followed by a discussion in which several members of the Club participated, brought the meeting to a close. Adjourned.—AMELIA S. ALLEN, *Secretary.*

JUNE.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, Berkeley, on Thursday evening, June 19, 1919. In the absence of all the regular officers of the Division Mr. C. B. Lastreto presided and acted also as secretary pro tem. The following were present: Members: Mesdames Grinnell, Kelly, Kibbe, Roe, Schlesinger, Misses Culver, Lueddemann, Pringle, Messrs. Bade, Grinnell, Kibbe, Lastreto, Morley, Trenor; visitors: Mesdames Bade, Lueddemann, Misses Ayer, Howitt, Swarth, Wood, Messrs. Abernathy, Kimball, Schlesinger, and Sell.

The minutes of the May meeting of the Northern Division were read and approved. Reading of the minutes of the Southern Division was dispensed with. Mr. Harold Heath was elected to membership.

Dr. Joseph Grinnell presented a paper on "Sequestration Notes of Birds". General discussion by those present followed, on bird notes and songs, the psychological impulses behind them, the relation of notes to life habits and other aspects of this question. Adjourned.—C. B. LASTRETO, *Secretary, pro tem.*

For Sale, Exchange and Want Column.*—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. Lee Chambers, *Eagle Rock, Los Angeles County, California.

Camping collector, 16 years museum experience in vertebrates, insects, etc., would join others and share expenses on week-ends or longer summer trips. Limited sale of collected material or exchange for technical nature books, publications, etc. References; correspondence solicited.—Horace G. Smith, *2918 Lafayette St., Denver, Colo.*

Wanted—Biological Survey Bulletins nos. 2, 4, 5, 7, 9, 12, 14, 16, 24. Bird-Lore vol. 1, index only; vol. 2, nos. 2, 3, 5; vol. 3, nos. 1, 2. Oologist, whole numbers 18, 23-24, 31, 32, 34-35, 38, 42, 53, 54, 56, 65, 66-67, 77, 90, 99, 138, 139, 140, 141, 144, 149, 153, 158, 159, 166, 168, 169, 176, 177, 179, 182, 185, 199, 203, 211, 213, 221, 222, 234, 236, 256. Ridgway's Birds of North & Middle America, parts 1 and 2.—Ralph W. Jackson, *Route No. 1, Cambridge, Maryland.*

For Sale—Birds of the Northwest, Coues; Color Key to N. A. Birds, Chapman; Bird Life, Chapman; Birds of California, Wheelock; Handbook of Birds of Western U. S., Bailey; Field Ornithology and Check-List, Coues; North American Birds Eggs, Reed; Birds of Pacific Slope of So. Calif., Willett; Birds of Huachuca Mts., Swarth; Oologist, 1910, 1913, 1914, complete, and 1911, 1912, 1915, incomplete; Condor, 1909 to 1917, complete, 1918 one number missing; Auk, 1911 to 1914, complete.—Mrs. Eva M. Blaine, *1026 No. Coronado St., Los Angeles, Calif.*

I have first 13 vols. of Forest and Stream, and 9 vols. of The Ibis, 1874 and up. What will you offer me?—Harold H. Bailey, *Newport News, Va.*

I Want a complete set or odd volumes of the Proceedings of the Biological Society of Washington. Will give good exchange or cash.—W. Lee Chambers, *Eagle Rock, Los Angeles County, California.*

For Sale—Ridgway's "Birds of North and Middle America", parts 1 to 7, as issued, paper, $24.00 (or bound, 4 vols. in half leather, $35.00); The Condor, vols. 3 to 20, complete as issued, paper, the set, $35.00; Pac. Coast Avifauna, nos. 1 to 8, and no. 11, paper, the set, $10.00; Proceedings Zoological Society of London, 1830-1849, complete, 19 vols. ("parts"), cloth, the set, $30.00.—Tracy I. Storer, *Museum of Vertebrate Zoology, Berkeley, Calif.*

Wanted—Fleas from birds' nests. For particulars apply to Hon. N. Charles Rothschild, *Arundel House, Kensington Palace Gardens, W. 8, London, England.*

MEETINGS OF THE COOPER ORNITHOLOGICAL CLUB

Northern Division: 8 p. m., third Thursday of month, at Museum of Vertebrate Zoology, University of California, Berkeley. Take any train or car to University Campus. The Museum is the corrugated iron building on south side of campus just north of football bleachers.—Mrs. Amelia S. Allen, *Sec'y., 87 Mosswood Road, Berkeley, Calif.*

Southern Division: 8 p. m., last Thursday of month, at Museum of History, Science, and Art, Exposition Park, Los Angeles. Take "University" car south on Spring St., or "Vermont and Georgia" south on Hill. Get off at Vermont and Thirty-ninth, and walk two blocks east to Exposition Park. The Museum is the building with the large dome.—L. E. Wyman, *Sec'y., care of Museum.*

Intermountain Chapter: Get date and place from the Sec'y., Ashby D. Boyle, *351 5th Ave., Salt Lake City, Utah.*

San Bernardino Chapter: Get date and place from the Sec'y., M. French Gilman, *Banning, Calif.*

AVIFAUNA No. 13

Second Ten Year Index to The Condor

By J. R. PEMBERTON

92 pages and cover

A thorough-going index to the large mass of ornithology comprized in volumes XI to XX, inclusive, of THE CONDOR. Segregates the information by species under all the different names employed; also by authors; by states and countries, in California by counties, and by subject-matter. Obviously indispensable to every live student of birds. The management urges prompt orders, so that the heavy expense involved in the publication of this number of the Avifauna series may be met without the necessity of curtailing the size of the current issues of THE CONDOR.

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Eagle Rock, Los Angeles County, California

THE CONDOR

A Magazine of Western Ornithology

Volume XXI September-October, 1919 Number 5

COOPER ORNITHOLOGICAL CLUB

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W. LEE CHAMBERS, Business Manager, Eagle Rock, Los Angeles County, California.

Issued September 30, 1919

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[Issued September 30, 1919]

AUTOBIOGRAPHICAL NOTES

By HENRY WETHERBEE HENSHAW

(*Continued from page 171*)

JOIN THE WHEELER SURVEY IN UTAH

IN JULY, 1872, this chance knowledge, however acquired, bore fruit in a telegram from Professor Baird, asking if I would go to Utah as natural history collector on the Wheeler Expedition. Knowing nothing of the expedition or of its objects, I telegraphed for further information, and received it in the shape of the following message: "Report immediately at Salt Lake City; pay transportation and take receipts". My inductive powers not being equal to the task of extracting much information from this somewhat brief message, I decided to go to Salt Lake and find out for myself what was wanted of me, a decision not difficult to understand by any young fellow who has read Lewis and Clark and Captain Bonneville and to whom the Great Plains, the Buffalo, and the Indians were words to conjure with. So I "paid transportation, took receipts", and in a few days found myself in Salt Lake City, face to face with Lieut. Geo. M. Wheeler, who, to no small extent, was to be master of my fate for the next decade.

Salt Lake City was then but a village compared to what it is now, and the Survey party was camped a mile or two out of the town on the side of one of its grass-bordered streets, through many of which streams of beautifully clear water ran, flanked by pasture land. The country round about being open furnished little of interest to the naturalist. Accordingly, after a few days preparation, on July 22, Doctor H. C. Yarrow, in charge of the Natural History work, and myself, duly armed and equipped, left for Provo, some fifty miles to the south, which, owing to its proximity to Utah Lake on one side and to the mountain canyons on the other, and to its orchards and cultivated fields, proved very good collecting ground. Here we spent several weeks before the regular field parties assembled.

I was greatly surprised to hear in the pastures round Provo the familiar song of the Bobolink, which up to that time I had supposed to be an exclusively eastern bird. A small colony, however, had established itself in this far western outpost, as since it has done elsewhere in the western states.

I may here note as a curious coincidence that at the time I was collecting birds round Provo, E. W. Nelson, then quite unknown to me, was also collecting birds a few miles to the north, a fact I have just become aware of. He had been in Wyoming assisting Prof. E. D. Cope in his search for fossils, and, having parted with that brilliant scientist, had made his way to Salt Lake City, near which he was collecting birds on his own initiative. Subsequently, a short account of his collections and observations near Salt Lake City, from July 27 to August 8, 1872, appeared in the Proceedings of the Boston Society of Natural History (xvii, 1875).

METHODS OF FIELD WORK

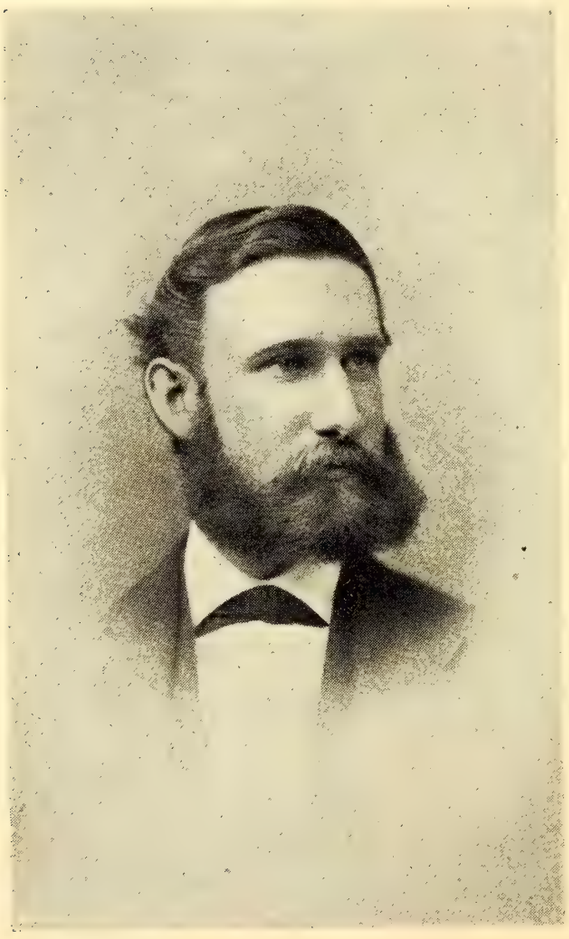

Fig. 35. Henry Wetherbee Henshaw in 1873.

Space does not permit giving full details of our work in Utah, which included, besides the collecting of birds, collecting in several other branches of natural history, as mammals, fish, reptiles, insects and even plants. Since the methods of work practised the first season differed a little from those in vogue later they may be briefly described, so as to afford an idea of the circumstances and difficulties that beset the path of the government collector nearly fifty years ago.

Be it understood, then, that the essential work of the Wheeler Survey, as of its predecessors in the War Department, was geographic, and consisted of the making of reconnaissance maps of the far west, much of which, even at that late date, was uninhabited and still very imperfectly known, especially the mountain regions. The collection of natural history specimens formed a very small part of the work of the several field parties, and naturally was wholly subordinate to the main purpose of the Survey.

PERSONNEL OF THE FIELD PARTIES

Each of the field parties was in charge of an army officer, usually a recent graduate of West Point, and consisted of one or more topographers, an assistant who had charge of an odometer (which was attached to a large wheel drawn by a mule), a geologist, a naturalist (not every party had either), a number of packers according to the size of the mule train, and one or more cooks, according to the size of the party. The number of parties varied with each season, but was from five to ten, including perhaps fifty individuals, and their fields of operation often were widely separated.

The naturalists and the geologists were assigned to one party or another, according to the opportunities for work offered by the several lines of travel. Thus each party was made up of from five to ten or more individuals according to circumstances. Though every effort was made to strip the personal belongings and camp equipage down to actual necessities, the impedimenta were not small, and necessitated for each party a mule train of from six to fifteen or twenty animals.

THE PACKERS

Most of the packers were roustabouts picked up here and there more or less at random, for in those days men skilled in that kind of work were rare and hard to find. Among them were not a few of the typical "bad men of the west" who have more recently been introduced into polite society through the medium of the novel and the movie. Bad some of them certainly were, but as a rule I found them very communicative and entertaining as comrades of the trail, and daily communication with them soon taught me that, however bad they were, each and all of them had not a few redeeming traits. First and last I received many kindnesses at their hands. Theirs was the laborious task each morning of rounding up the mule herd—not always an easy matter, especially when, owing to lack of grass or water, the herd had taken a notion to retrace its steps to the last camp, often fifteen or twenty miles away. Their duty, too, it was to assemble and tie into bundles the camp impedimenta, and then by means of the famed "diamond hitch" fasten the boxes and bundles to the aparejos (large padded saddles), which had been securely cinched on the unwilling mules. As many of the packages weighed upwards of a hundred pounds apiece, the job of lifting them into place and securing them there required no mean degree of strength, skill, and patience. Three hundred pounds was not an uncommon load for a stout mule, and for a limited time on good roads a mule may carry as much as four hundred pounds. The packers travelled constantly with the train, not only to protect it, but to adjust and tighten the packs from time to time as needed. In rough country or rainy weather, this was not seldom, and not infrequently a pack animal was upset, or crowded off a mountain trail, to roll down a hundred feet or so into the stream below, when the packers had to plunge into the water, rescue the drowning animal and its pack, and replace the load. Polished manners and scholarly attainments were foreign to the packer's calling, and usually they lacked the gift of eloquent speech, but when things went wrong with the train, and stubborn mules needed rebuke, their outbursts of profane imaginings amounted to real eloquence.

THE AMERICAN MULE

This part of my theme would be incomplete did I not add a word on the subject of the American Mule—an animal, which, to my mind, has never received full justice. Overlooking the bar sinister which attaches to his birth, and judging him in a friendly and not a hostile spirit, his native virtues are many, his faults few, and those chiefly due to bad treatment. Stripes and blows he never forgets and rarely forgives, and, as he has a good memory, he sometimes waits long for an opportunity to retaliate. That he is stubborn cannot be denied, but he is also patient and long suffering, and such is his endurance that he survives and even prospers under circumstances, such as lack of food and water, which would quickly prove fatal to his nobler(?) and more

highly organized relative, the horse. Strong and enduring, he is a tower of strength on the dizzy mountain trail and in the parched desert. He soon comes to recognize the kind touch and decent treatment of the master, and to kindness and consideration he quickly responds. A good riding mule, and there are many such, is the easiest riding animal in the world. As mules carried me during my explorations in the far west many thousands of miles I raise my voice in praise of this much misunderstood and much underestimated animal. May his days in the land be long and prosperous, and in due time may he come into his own.

THE CAMP COOK

Last but not least in importance in our field personnel was the cook. Whatsoever he chanced to be as man, upon his ability as a cook depended to no small degree the health and comfort of the party. Much rested upon his skill, but perhaps more upon his patience and zeal. To cook a savory meal on a modern gas range, with all the conveniences at hand, is not so difficult; but to achieve this feat in the open air, on a windy day, often under a rainy sky, with bits of brushwood for fuel, and a horde of hungry men demanding something to eat, is given only to the elect and to few of them. I hold in grateful memory a number of such cooks whose triumphs over the trials and tribulations that beset their calling entitle them to golden crowns. Some of them are still alive, and I trust that these few words of appreciation may meet their eyes; while in grateful remembrance of those who have gone before I add peace to their ashes.

INDIANS IN THE FAR WEST

In Utah, in 1872, there had been trouble, with some bloodshed, between the Mormons and the Paiutes. Later, in Arizona, the Apaches were restless, and hence in the early days of the expedition it was thought necessary to attach to each of our parties a small escort of soldiers. As however, Lieut. Wheeler took the precaution to call the Chiefs together, have a talk with them, explain the peaceful objects of the Survey, and, perhaps wiser still, to make them presents of blankets and other objects of moment in their eyes, our escort was never called upon to use their arms in our behalf, though doubtless their presence was not without moral effect on our red brothers.

The suspected presence of Indians near us, however, interfered somewhat with our comfort and sense of safety, more especially as in 1872 the party in the mountains to which I was attached observed signal smokes near our line day by day and signal fires at night. These seemed to signify that the Indians were keeping tab on our movements, and so alarmed our Mormon guide that he refused to accompany us farther into the mountains, and left Lieut. Wheeler to guide the party himself, which he proved fully competent to do. Once, only, during the term of my service with the Survey did I hear the whistle of a hostile bullet. This was on the trip just mentioned when one morning I was peacefully collecting in a brushy canyon a mile or more from camp, when a shot was fired from the brush the other side of the ravine. Interpreting this as a mild request to go no farther in that particular direction, I pursued my later investigations nearer camp.

I may add here that all the Indians I ever saw shoot, or that I hunted with, were poor shots; as, indeed, was but natural, since the Indian's skill in stalking game was so great as usually to insure a dead shot at close range. Moreover, ammunition was so scarce with them, as a rule, that they could not

afford to practise with a rifle, and rarely took any chances with long shots at game. The eyes of the Indian for out-of-door objects are proverbially sharp, as I had reason to discover at Camp Apache. When out collecting birds my footsteps were frequently tagged by one or more lads from the Indian camp hard by, and the skill displayed by them in detecting birds in the thick brush and among the leafy tree tops put me fairly to shame, and incidentally earned their well merited contempt for the white man's blindness.

LIFE IN THE OPEN

Lieut. Wheeler early learned that to do good work the men must be well fed and well supplied with bedding, and no one had just cause of complaint in these respects. Everybody slept on the ground under the open sky, and, given youth and health, no one need desire a more luxurious couch. For several years the saddle formed my pillow; but it was by no means so comfortable as a small rubber inflatable pillow which I later adopted. True, even in the dry climate of the west it sometimes rained, but a large piece of canvas, ten by twelve, or thereabouts, furnished an adequate shelter during any ordinary downpour, as well as a protection from dust and rain for the roll of bedding during the day's march. To the chief of each party was usually assigned a tent, but to no other, save the naturalist, since he was compelled often to work on his specimens by candle light, sometimes even into the wee small hours.

The length of the day's march depended upon many circumstances, especially the presence of wood, water, and grass, but averaged somewhere between twelve and twenty-five miles. We were awakened early, and frequently had breakfasted and were in the saddle by six or before. The members of the party then scattered, each to his own work, except in an Indian country, while the train, headed by the bell mare, which usually was led by the cook, followed a designated route till about four or five in the afternoon, when camp was made, always provided water, wood, and grass had been found by that time. The first was absolutely necessary, except in dire necessity when a keg or two of water, which we usually carried in a desert country, enabled a dry camp to be made; the second was important, though we usually had a reserve supply of barley for the mules in case of need, and the third very desirable.

When wood was scarce the cook was wont to look to the other members of the party for assistance, and he rarely looked in vain, for by late afternoon the several members, after a light luncheon carried in the pocket, always seemed to be in a state closely verging on starvation. By dusk, or a little before, all the men were in camp, and dinner was served on a sheet of canvas spread on the ground. Later this rather primitive arrangement was replaced by a table made of the top of two mess chests which greatly added to our comfort, especially in rainy weather.

The rations supplied by the U. S. commissary were abundant and of sufficient variety to keep the men in abounding good health. The naturalist, with a trusty shotgun always by his side and an abundance of ammunition, was always a welcome addition to any party, and in those days, when every mountain stream was full of hungry trout, and turkeys, geese, grouse, sage-hens, rabbits, and other small game abounded in many localities, to say nothing of deer, his contributions to the mess were neither small nor unimportant.

(*To be continued*)

DIFFERENTIAL SEX MIGRATION OF MALLARDS IN NEW MEXICO

By ALDO LEOPOLD

TWENTY years ago, in hunting ducks on the bottom lands of the Mississippi in Iowa and Illinois, I was taught by my father to "pick" Mallard drakes. It was our custom to measure a day's sport, not merely by the number of ducks bagged, but by the proportion of greenheads to hens. A high percentage of drakes in the day's bag was regarded not only as a special feat of skill, but as proof that the bag had not been attained by "flock-shooting", which was discountenanced as productive of cripples. We shot small-bore guns, used small shot, frowned upon long range shooting, and in general operated on the principle of "pick your drake and kill him dead."

As a consequence, I have grown up with what might be called a special "eye" for Mallard drakes. Two years ago I started shooting on the Rio Grande in the vicinity of Albuquerque, and naturally tried to adhere to the old custom of shooting the male birds. It soon became apparent, however, that special conditions obtained here with respect to the relative abundance of the two sexes. The following table, based on my hunting journal, gives the percentage of Mallard drakes to hens killed during weekly hunts over the same territory during 1917 and 1918.

Date	Percentage of drakes killed 1917	1918	Average based on weighted curve
October 16	——	25	10
October 23	——	50	15
November 1	0	50	40
November 8	42	——	45
November15	——	65	55
November 23	50	90	65
December 1	——	80	62
December 8	50	——	60
December 15	——	——	——
December 23	——	——	——
January 1	——	——	——
January 8	——	——	——
January 15	70	——	——
January 23	——	50	60
January 31	——	——	——
Total number of birds	29	48	77

The short period of time and the small number of birds killed necessarily renders the foregoing table inconclusive. As supplemented by careful observation, however, I am ready to offer it as evidence in support of the following statement covering the last two years:

1. When the season opened in October, there was a notable preponderance of hen Mallards in the Rio Grande Valley near Albuquerque.
2. By the first week in November this preponderance of hens disappeared, and until the main flight was over, about December 1, there was a preponderance of drakes.
3. Among the Mallards wintering here, after the main flight was over, the proportion of drakes to hens was normal.

These conclusions could easily be offered on the basis of ocular observations alone. During October one may see whole flocks of Mallards without a drake. During November I have seen many flocks without a hen, and have brought in bags of 7 drakes and 1 hen, 9 drakes and 4 hens, etc. Duck hunters will readily appreciate that, inasmuch as the bag is almost always derived largely from single birds and pairs, regardless of any effort to pick the greenheads the above figures indicate a preponderance of drakes. In fact the artificial selection of drakes may simply be regarded as a constant factor which does not affect the conclusions here drawn.

It may, of course, be suggested that the observed preponderance of hens in October is not reliable because of the obscure coloration of the birds early in the season. In this locality, however, the drakes on October 16 have the chestnut breast patch, white ring around the neck, and green head well developed. There are still spots on the under parts and rusty feather-tips on the head, but the general effect is unmistakable.

Two other questions might be raised as bearing on the significance of these conclusions. First, were the birds observed migrants or local? They must be migrants. Since the stoppage of spring shooting a few Mallards have nested here; but the movement of ducks begins in August, and by October 16 there are many more ducks of more species, more widely distributed, than could be accounted for as local birds. Second, may this not have been an accidental phenomenon peculiar to 1917 and 1918? As to this point I have nothing to offer except an intended continuance of my observations. The testimony of hunters who do not keep written notes is valueless on questions of this kind, no matter how extended their experience.

To sum up the foregoing discussion, the writer has concluded that there is a differential sex migration of Mallards in the Rio Grande Valley, the females arriving first and the males afterward. A normal proportion of sexes is not reached until the main flight is over and only the wintering ducks remain. How may this differential migration be accounted for?

I have no answer to this question. A few tagged ducks so far reported indicate that in general this part of the Southwest is on the same migration route as Great Salt Lake. Is there possibly a difference between the sexes in the time of completion of the plumage after the flightless period? Is there possibly a differential routing of sexes? Does the migratory impulse seize the females first? Has the phenomenon of differential sex migration been observed elsewhere, in this or other species? Any evidence on these questions might throw light on this very interesting problem.

Albuquerque, New Mexico, February 1, 1919.

DESCRIPTION OF A TWENTY-YEAR SERIES OF EGGS OF THE SIERRA JUNCO

By MILTON S. RAY

WITH FOUR PHOTOGRAPHS BY OLUF J. HEINEMANN

THE SERIES of eggs of the Sierra Junco (*Junco oreganus thurberi*) in the Woodland Heights Museum of Analytical Oology (San Francisco) consists of exactly seventy-five sets. These have been collected during the period from 1900 to 1919 or an average of about four sets a year. The sets taken were specially selected to show variation and constitute only a fractional part of the large number noted afield.

In the arrangement of the following text, a systematic plan for egg description is proposed in place of the incomplete, rambling and often rather vague descriptions of Oliver Davie and various other writers. The color-plate numbers refer to Ridgway's *Color Standards and Color Nomenclature*, 1912. Notwithstanding the abundance of material in the museum or that which I have inspected afield, it is quite possible that other types of coloration in the eggs of this bird still remain to be described.

Junco oreganus thurberi Anthony

SIERRA JUNCO

Synonyms.—Thurber Junco; Western Snowbird.

Description.—Cf. Ridgway, Birds of North and Middle America, part I, 1901, p. 287.

Breeding Range.—Cf. Grinnell, Pacific Coast Avifauna no. 11, p. 120.

Eggs.—Usually 4, sometimes 3, occasionally 5; also authentic set of 1.

Size (in inches).—

Average	set (no. 23),	.78x.60	.78x.59	.77x.61	.77x.61
Small	set (no. 47).	.69x.49	.73x.51	.73x.51	.74x.52
Small	set (no. 61),	.67x.54	.68x.54	.69x.54	.71x.55
Large	set (no. 20),	.96x.57	.91x.57	.90x.57	

Shape.—Usually ovate or rounded ovate, sometimes short ovate, rarely elongate ovate.

Texture.—Fine.

Surface.—A slight, very slight, or scarcely perceptible, gloss.

Coloration.—

1. Ground color white, faintly tinged with lichen-green (Ridgway, pl. XXXIII), spotted and blotched or splashed with hazel (pl. XIV), chestnut (pl. II), and light vinaceous gray (pl. L). This is the usual coloration of the eggs of this junco. [Four eggs of set no. 15.]
2. Ground color white, faintly tinged with lichen-green (pl. XXXIII), heavily blotched and splashed, principally around the greater end, with hazel and cinnamon rufous (pl. XIV). [Egg of set no. 48.]
3. Ground color white, faintly tinged with lichen-green (pl. XXXIII), spotted and lightly blotched, principally around the major end, with chestnut (pl. II), vinaceous drab (pl. XLV) and light vinaceous gray (pl. L). This specimen thus shows three distinct colors of markings. [Egg in set 12.]
4. Ground color pale olive buff (pl. XL), spotted and splashed, principally in a heavy wreath around the larger end, with hazel (pl. XIV) and light vinaceous-gray (pl. L). [Egg in set 74.]
5. Ground color white faintly tinged with lichen-green (pl. XXXIII) roughly wreathed around the greater end with spots, splashes and scrawls of hazel (pl. XIV) and light seal brown (pl. XXXIX), and with scattered spots of light vinaceous-gray (pl. L). [Egg in set 56.]
6. Ground color very pale lichen-green (pl. XXXIII), spotted and blotched (some eggs very finely spotted and dotted), almost entirely in a wreath around the greater end, with light vinaceous-gray (pl. L) and aniline black (pl L). This is a very distinct and rather uncommon type. [Egg in set 33.]

7. Ground color white faintly tinged with lichen-green (pl. xxxiii), spotted and lightly blotched, very evenly over the entire surface, with vinaceous drab (pl. xlv) and hazel (pl. xiv), but principally the former color. The blending of these two colors, which are very closely intermixed, gives to the egg a peculiar "pinkish-red" effect. [Egg in set 38.]
8. Ground color white faintly tinged with lichen-green (pl. xxxiii), spotted and blotched principally around the larger end with vinaceous drab (pl. xlv). [Egg in set 53.]
9. Ground color white faintly tinged with lichen-green (pl. xxxiii), finely spotted and blotched, principally around the larger end, with light vinaceous gray (pl. l). [Egg of set 42.]
10. Ground color very pale lichen-green (pl. xxxiii), scatteringly and sparsely marked (in fact the markings are so few that they can be counted) with tiny scrawls and spots of aniline black (pl. l). This is a rare type. [Egg in set 30.]
11. Very pale lichen-green (pl. xxxiii), unmarked. A rare type. [Egg of set 30.]

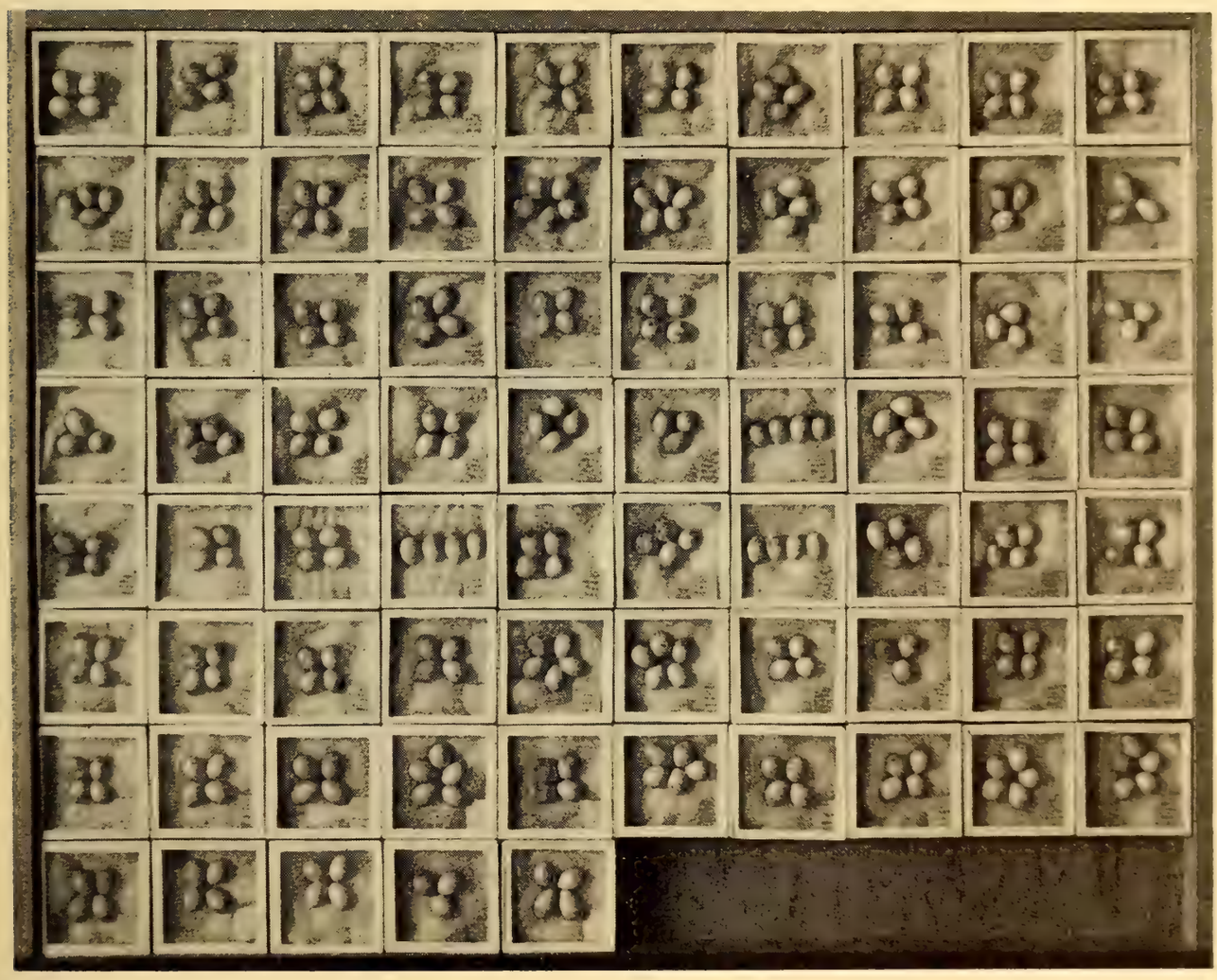

Fig. 36. The twenty-year series of eggs of the Sierra Junco, consisting of 75 sets; arranged numerically left to right.

Types of Marking.—

1. Unmarked save for a few scattered spots and scrawl-like spots.
2. Obscurely washed and clouded over the entire surface.
3. Spotted and finely blotched, principally about the larger end.
4. Spotted and finely blotched over the entire surface.
5. Heavly spotted and blotched in a wreath around the major end, the balance of the surface being almost clear of markings.

6. Heavily spotted and blotched in a rough wreath around the larger end, and with finer and more scattered markings over the balance of the egg. Sometimes, so minute and close that the individual specks are scarcely discernible, giving a peculiar dusty or "cobweb-like" effect.

Field Notes.— My observations of this subspecies cover elevations from 3,500 to 11,000 feet altitude in the Sierras, and localities from Eagle Lake, Lassen County, south to Lake Reflection near the Kings-Kern Divide. Most nests are found by flushing the sitting bird, but almost any nest can be located by patient watching. They are usually placed on the ground, sunk flush with, or beneath, the surface, and concealed by overhanging earth, rock, weeds, shrubbery, or a fallen log or limb. Also noted nesting in holes in trees and banks, on rafters of deserted cabins, in empty tin cans or wooden boxes, and once under the eaves of an occupied store, 25 feet up; but at no time, as in the case of *Junco oreganus pinosus*, have I found a well built nest placed on the branch of a tree. Henry W. Carriger, however, informs me that at Lake Tahoe he found one nest placed on a pine limb, 5 feet up.

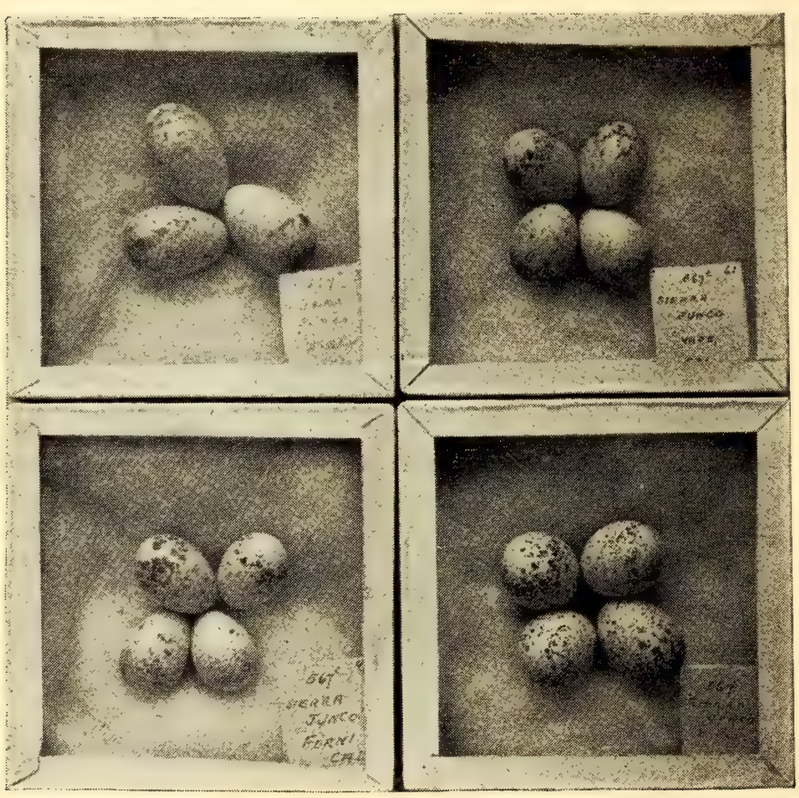

Fig. 37. Four sets of eggs of the Sierra Junco showing variation in size; in the accompanying text the measurements of these sets are given. Upper row, left to right, sets 20 and 47; lower row, 61 and 23.

A typical nest (no. 18) is composed outwardly of grasses, rootlets, string and pine needles, and is lined profusely with red cow-hair. This measures 4.25 inches across, the cavity 2.50 across by 1.38 deep. Taken June 8, 1911, Bijou, Lake Tahoe, California (elevation 6,220 feet), with four fresh eggs. Nest placed on meadow ground, flush with the surface, beneath a burnt log.

Another (no. 24) is made of rootlets, bark strips and moss, and is lined with fine grasses and wild animal hair. Measures 4.25 across; cavity 2.00 by 1.13; collected May 16, 1913; Fyffe, El Dorado County, California (elevation 3,700 feet). Held four eggs, incubation well started. Nest placed near an irrigation ditch, entirely concealed by overhanging foliage, small cedar and alder saplings, and dead leaves.

A third nest (no. 2) is built of grasses, weed-stems and pine needles and lined with fine grasses and horse-hair. Size 5.00 across; cavity 3.00 by 1.50; found May 21, 1910, at Bijou, California; contained 4 fresh eggs. Nest located beneath the overhanging edge of a log on meadow ground.

We have taken eggs from the beginning of May up to the middle of July, considerable variation in this respect being due to altitude and also to seasonal

conditions. At Bijou, California, I have found nests in early May while the majority of the juncos were still in flocks. At Forni Meadow, 7,500 feet elevation, we noted a pair engaged in nest building on July 2, 1916.

It is not often that an opportunity is offered to secure the first and second sets of eggs from any one pair of juncos. This difficulty is due to the variable character of the birds' nesting sites, to the heavy percentage of nests destroyed, and to the time that must necessarily elapse before a second set can be laid. During the present year (1919), however, we were fortunate in securing first and second sets from two pairs of juncos which, nesting in rather secluded situations, rendered the locating of their second nests less difficult. Set 63 was taken June 12; and on June 21, 300 feet distant, the second set, no. 75, was secured. Set 62 was collected on the 11th of June, and no. 73, a second set, nine days later and but 60 feet away from the site of this pair's first nest.

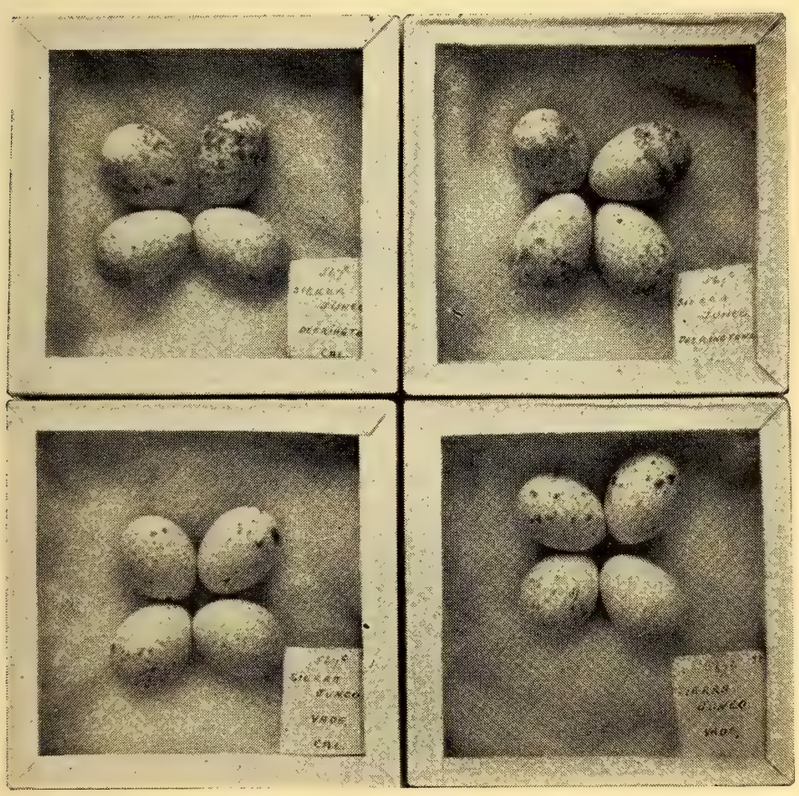

Fig. 38. A STUDY OF FIRST AND SECOND SETS OF EGGS FROM THE SAME PAIRS OF JUNCOS; NOTE THE WONDERFUL SIMILARITY IN SIZE, SHAPE, AND STYLE OF THE MARKINGS. UNFORTUNATELY AN EVEN GREATER SIMILARITY IN THE COLORING CANNOT BE SHOWN. UPPER ROW, SETS 63 AND 75; LOWER ROW, SETS 62 AND 73.

Construction of all four nests was practically the same. The second nests were in no way more carefully concealed, as has sometimes been the case in my experience with those of other species.

Much of interest could, of course, be written regarding the junco from notes afield, but, as previously explained, the intention here is to bring the eggs to the front and leave all else subordinated. Before closing, however, I wish to speak of a very unusual situation. This is the occurrence and nesting of this bird at Stanford University near Palo Alto, Santa Clara County, California. Professor J. O. Snyder personally informed me that the identity of these breeding birds, of which several were secured, is positive. Now I wish to show that, according to published and other records, we have breeding *thurberi* almost entirely surrounded by breeding *pinosus*! For to the northward, in rather similar country (not among redwood timber) in Northern San Mateo County, J. Roy Pemberton has secured typical *pinosus* breeding. Northward also, but much nearer, in fact only a few miles from Stanford (and likewise not in sequoian association) Chase Littlejohn has also found *pinosus* breeding, in Redwood City. Mr. Littlejohn writes as follows, under date February 23, 1919: "While they are common enough in the winter I can say I have never found *thurberi* here during the breeding season, and I have paid partic-

ular attention since I noticed in THE CONDOR that a set of their eggs had been taken at Palo Alto. I know of three junco nests being found about Redwood City last summer. These were built about the eaves of occupied dwellings and in one case inside the attic and all of them were of *pinosus.*''

Westward, in sequoian environment, *pinosus* has been found breeding in the vicinity of King Mountain. The late Chester Barlow, under date of May 16, 1901, wrote me as follows: ''I took a set of four eggs of *pinosus* near King

Fig. 39. THE COLOR DESCRIPTIONS OF THE EGGS OF THE SIERRA JUNCO IN THE PRESENT ARTICLE ARE BASED UPON THE TEN SETS SHOWN ABOVE. THESE, AS ARRANGED, ARE NUMBERS 15, 48, 12, 74, 56, 33, 38, 53, 42, 30, READING LEFT TO RIGHT.

Mountain last Sunday. I shot the female parent, which does not differ from breeding birds taken farther south in the range''.

Southward from Stanford in the redwood forests of the Santa Cruz Mountains *pinosus* is the only form of the genus recorded by Richard C. McGregor in his ''Birds of Santa Cruz County'' (p. 14), while eastward from Stanford and Palo Alto a wide sweep of salt marsh runs out to San Francisco Bay, a region wholly unsuitable for birds of this character.

San Francisco, July 28, 1919.

A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

(*Continued from page 162*)

2

ON days when there was a strong east wind, a good many birds collected at the east side of the lake for the shelter of the wide band of tules and the tree-bordered bank above. On one such morning I was delighted to find a large motherly Canvasback with nine nearly grown young among the number. The straight Grecian nose line was enough to identify the family on sight, while the mother's head was light compared with the reddish heads of the young, her throat being almost white in contrast to the cinnamon of her body. A small blue-billed Ruddy Duck got in among her brood when they were swimming about one of his feeding grounds, and she promptly swam at him, chasing him until he dived ignominiously; proud little Ruddy, who had driven a Pied-bill off these very premises not long before! The mother Canvasback dived easily, but the young made hard work of it, giving a porpoise-like hop as they went down, showing their white under tail coverts as they disappeared. By a quarter past eight the young Canvasbacks were sitting with their heads on their backs resting, early though it was; while their mother sat with her head up looking at me.

Another morning I was greatly pleased to discover a small mother Ruddy swimming along the tules with eleven newly-hatched little ones, leaving a wake of bubbles behind them when they swam fast. While I was watching the population of the eastern shore, flocks of Ducks, with whistling wings would pass over my head, the Blue-winged Teal with their free, tilting flight, in the mornings coming in from their roosting lakes, in the afternoons passing out to them.

One morning in the middle of August it was so hot that there was very little going on. The lake was a mirror spotted with resting water fowl, its tule islands softly hazy, hazily reflected in the lake, white spots here and there marking the heads of Ruddy Ducks. Little was heard but the occasional call of a Pied-bill or other Grebe.

An interesting figure often seen wandering around by itself on the east side of the lake, was a little Horned Grebe, with light cheeks and a reddish brown throat, either a brooding bird taking her daily outing, or her mate trying to pass his time during her absence. And one red letter day, August 15, out beyond the wide tule band I saw four species of Grebe at once—the light-headed Horned, the chunked little Pied-bill, a Holbœll with its long reddish brown neck, who gave a *kruk* of warning, and at last a partly grown family of the white-throated Western Grebe that I had been looking for ever since I came to the lake; their low distant calls having teased my ears with memories of the beautiful flock on Devil's Lake. The length of the neck was what struck me first, and then the whole white front. A soft *keĭ'r'r'r-ree* again recalled the flock and made clear the difference between the cry of the Western and the Holbœll. The next day I found one of the Western again in the same place, diving and apparently rising only far enough to put up its bill for air. Finally it flew, away across the lake, showing its white wing patches and its feet held out behind as it disappeared, its low quavering call resounding over the water. After that I scanned the lake eagerly for the silvery throats, but the large

white spots in the tules across the lake all proved to be Herons, the small white spots at the foot of the tules, Ruddies, and those out on the lake, Gulls.

Occasionally during the summer I had caught glimpses of the Eared Grebe on the east side of the lake, so completing the number of those that breed in the northern United States. And on September 2, when, having returned to the farm on north Sweetwater, I drove back with our little school boy to see what was there, I discovered to my great delight, a mother Eared Grebe with the pointed crest and dark fall plumage, diving and feeding a half grown young one with a black crown and white throat and breast. Between feedings the little fellow helped himself a bit, putting his head adeptly under water. While I counted the number of times the active mother dived in a minute the school boy held the watch to time her. Six, seven, and six, the record ran, in the three minutes before the pair were hidden by the tules. It was a pretty picture of maternal devotion, the old mother, gentlest and most attractive of all the Grebes, working so tirelessly to care for her little one. The charm of the picture appealed to the child by my side, with a new little brother at home, and as we turned away he asked gently, "Isn't it dear?" When shown the willow gateway and the platform where the nestling Coot had been, he entered right into the spirit of that, too, as we walked away, saying softly, "That's a nice little place."

The morning when the four species of Grebes were disporting themselves outside the tules, hundreds of Ducks passed over from the east about half past nine, an enormous flock of Blue-winged Teal whistling low over my head with their tilting swerving flight, passing on to their feeding grounds at the back of the lake. The Ducks usually began coming earlier in the morning, and when the fields around their open eastern lakes were being harvested, apparently fled before the harvesters.

As far as I could determine, the Ruddies were not among those who shifted to the open lakes for the night. The largest part of the Ruddy population of the lake, when wind and weather were favorable, were to be found in a quiet cove at the southwestern corner, protected by a border of thick woods and willows and a wide band of tule. On two days when the cove was empty, it was swept by the wind. My first visit was on a quiet day and with the glass I counted between a hundred and twenty and a hundred and thirty Ruddies among the brown spots in the cove, enumerating only those in which I could actually make out either the white cheek patches, the ruddy backs, or the spike tails. Another day—August 8—there were still more. There seemed to be a good many females among them and there may have been more than I noted, for at a distance, unless the spike tails are seen, it is very hard to distinguish these obscure little Ducks. But in my count, the males seemed largely in the majority. Of thirty-nine counted on August 9, twenty-five were adult males, and on August 15, thirty-two males were counted and no females distinguished.

From the cove it was an easy swim for the little Ruddies across to the north-west shore. Here there were jungles of cane, six to eight feet high, topped with heavy pinkish brown brooms, down whose lanes young families were seen swimming, and patches of high tule leading out with protecting cover to the main tule islands near the middle of the lake where busy waterfowl were always to be seen. White spots at the base of stands of tule from shore to islands attested the popularity of the safe harbor with the Ruddies. Coots and a variety of Ducks were also found here, swimming about with their small families. A Coot who caught sight of me as one of her red-heads started to

cross a waterway made it turn back abruptly by her terrified, peremptory *tub-up*; and by her hysterical outbursts made a Marsh Hawk change his mind several times when starting to light on the tules.

This northwestern secluded part of the lake, farthest from even occasional passersby, was that in which Tule Wrens sang, and into which the flocks of Ducks that came over in the early mornings first settled down, and were seen bathing, rushing around in the water, or rising and flying across to the Coulee or the long slough in the pasture where they liked to rest. They also gathered here under the tules and the protecting bank above when a high northwest wind had crested the lake with white caps and driven the water fowl to cover; for whichever way the wind blew across the lake, the Ducks were to be found under the bank on the side from which it came, as in this way they escaped the roughness of waves swept by the wind. Large flocks assembled on the long slough in the pasture—three hundred I counted at one time—standing in close rows with bills on their shoulders looking like headless horsemen, or, in view of their brown eclipse plumage assumed after the breeding season, more particularly suggesting rows of mushrooms, brown on top, lighter below. Who and what were they all? After watching the handsomely and distinctively colored males in the early part of the season, it was trying enough to have them mask themselves in this way, and I greeted the diagnostic spoon bill of the Shoveller, the long neck of the Pintail, and the blue wing patches of the Teal with positive gratitude.

Sometimes a great flock would rise and break away, leaving me bewildered if they failed to show the few earmarks I had mastered during the season. Alas for the acquired knowledge of the hunter without his bag! At the lake end of the slough, one morning, seeing only a few Ducks in the marsh grass to detain me, I was hurrying by when, with a roar, a well hidden flock rose before my astonished gaze. Even more pasture land had formerly been given over to the water fowl of the adjoining lake, for, as had been proved by a lengthy law suit, this was meandering land, changing its boundaries with the changing rainfall so that no titles could be given to it by the government.

3

While the larger part of the waterfowl of the lake were naturally found along its sheltering marshy borders, some interesting sights were seen off the wooded southern shore. On my first visit to this shore, looking through the trees, I saw an intimate family picture—two of the handsome red-necked Holbœll Grebes swimming protectingly around with their two downy young. So I had found the breeding ground of the Holbœll at last and should have the opportunity to study it! Three days later, on August 1, I found an adult with two nearly half grown young. While the mother—to settle all matters of sex arbitrarily—bathed and preened, showing her warm ruddy neck and white throat patch, the young showed the white throat—a distinct patch across the water—a pale reddish neck, and the characteristic Grebe breast. While the mother rose and shook the water from her feathers, one of the young indolently lay prone on the water and stretched his foot. The next evening between 6:30 and 6:50 I found the old Grebe giving her young what was probably their last meal for the night. As she held her bill down, a pretty effect was given, the loop made by neck and bill being reflected in the water. Six Holbœlls were subsequently seen, resting out in front of the tules bordering the lake.

And then came the best of all—the discovery of a family of three half or three quarters grown young whose mother kept them mostly close along the protected wooded border of the lake, where, from the high bank above, guarding my steps that no crackling twigs might alarm them, and screening myself behind tree trunks and low hanging branches, I was able to watch them for ten days, so enjoying one of the pleasantest experiences of the season and seeing many a pretty family picture as they passed their time as they chose at home, unconscious of observers.

The first time I saw them they were followed at a little distance by the light-cheeked, solitary Horned Grebe that I had often seen swimming quietly by itself about the lake. Unobtrusively the Solitary One followed the Happy Family, as if it enjoyed watching their pretty ways. One of the brood kept close to his mother, talking continuously in weak infantile tones, sometimes hinting that he wanted food or a ride, but more often showing that he just wanted his mother—a real mother's baby! Once their two heads were reflected, making a sweet maternal picture. And again the mother raised her head to let the little one pass under her bill. He swam part of the time close to her neck, which gave her a sweet protecting air. When another of the brood swam up beside her, Little Talkative kept right on. In preening herself Mother Holbœll had left a white feather sticking out on her side and the little fellow catching sight of it swam close and tweaked at it so hard that she had to swim out of his reach.

Before starting to feed her brood, the old Grebe, to my amazement and chagrin, deliberately swam out at the lonely little Solitary One with such menace that it dived and disappeared from the neighborhood. How could she have done such a thing? I found myself looking at her with indignant protest. But —she had probably suffered from hungry onlookers before and was simply following Nature's command that the family must be preserved, at whatever cost. It is so easy to judge of one's neighbor quite apart from her relation to the universe.

Mother Holbœll, now having the world to herself, began diving for weed. When she came up wet, she sometimes rose and showed big white patches at the back of her wings, and dried her head by rubbing it on her back. When she brought a streamer of green weed she would shake it before passing it on to the young. On rare occasions, greatly to the astonishment of the waiting three, she would swallow it herself. This was undoubtedly because they did not seem very hungry. After eating a little they laid their heads down on their backs as the Western Grebes do, but in this case the oval front, instead of white, was a pale reddish brown. While their mother was feeding them, another adult whom I surmised was the father of the family, was seen on the outskirts bathing and diving, after which he swam away with a long narrow wake.

When I went on down to the cove I found another Holbœll family there—a parent with two nearly grown young. One of the young turned on his side to preen, showing the white Grebe breast, and then the brothers swam off by themselves, diving independently. When they had gone far enough, however, a loud peremptory *ker'r'r-kar'r-kar'r* recalled them, and as their parent waited, with quick obedience they started to swim back. One stopped a moment for a dive, but then, as if feeling guilty, hurried on with the green weed uneaten in his bill.

Returning along the crest of the wooded bank, at the highest point I could look off over lake and Coulee, and out across the prairie, with the glass

recognizing the pleasantly familiar forms of the house, barn, and windmill of the farm on North Sweetwater where I had spent the early summer. Farther down the shore, near where I had left them, I found my family of three, Little Talkative babbling on as before close beside his mother, while she answered with a single motherly *kruk'* often enough to seem interested in his talk. The little fellow, after again pulling at the tempting white feather, lay down full length on the water putting his foot out so that the lobes showed, as the Western Grebe had done, and made me laugh by shaking it behind him as a dog wags his tail. It seemed to be a favorite pastime. When the young were swimming through the clear water, I could see their lobate paddles steering, turning them to right or left.

Just before I went home, the second adult, whom I had taken for the father, came up in sight with green lake weed dangling from his bill. Catching sight of him, the young started eagerly and swam toward him, but before they could get to him, he dived and swam out of their reach under water. As there was nothing else to do, they turned around and swam back to their faithful mother. This unnatural action on the part of the supposed father troubled me sorely till I reflected that perhaps two such large conspicuous birds feeding a brood might sometimes be a menace, and concluded that many of the apparently unnatural and immoral acts of Cowbirds and their brothers may find their explanation in the working out of the long evolutionary story.

Another day two of the young were talking to Mother Holbœll at the same time, their open bills showing as they followed her around. They were so well fed that their crops bulged, making ruddy apples of them. A good recognition mark these rufous apples made across the water, having the same outline as the white apples of the Western and the young Eared Grebes, but being strikingly rufous. When a young Holbœll was seen near by, its neck was laid on its back, its bill being one side of the rotund ruddy apple.

When the plump trio were idly resting on the water, their mother suddenly swam at one of the larger ones and, as with malice aforethought, gave it a poke with her bill. However her son interpreted this forcible exhortation, he at once began to preen himself, diligently. Then she swam at another of the strong ones, chasing him till he dived, after which she rose and shook her wings triumphantly. Little stuffed apples! It was time they should dive for themselves, not just sit around and be fed all day long. As if to enforce her lesson on independence, Mother Holbœll suddenly started and raced away through the water, leaving the three to take care of themselves. Perhaps there was another side to the question. Possibly the incessant chattering of youngsters gets on the nerves of even such faithful mothers as Grebes! While I was trying to apologize for her surprising behavior—back she swam to her brood!

The next morning my family were found as usual on the smooth water of the cool shaded shore. In my eagerness to see them, I may have pressed too close to my green screen or may have snapped a twig. In any case the mother evidently saw me, for she gave her *cluck* of warning and they swam farther out from shore, one of the youngsters kicking up the water behind him in paddling around. The mother and Little Talkative stayed together and preened while the two larger brothers apparently were out fending for themselves—one was seen diving. The discipline of the previous day was surely bearing fruit! For about a week longer Mother Holbœll and Little Talkative were seen together, the Disciplined Brothers occasionally being seen in their environs.

(*To be continued*)

BIRD NOTES FROM SOUTHEASTERN OREGON AND NORTHEASTERN CALIFORNIA

By GEORGE WILLETT

WITH FIVE PHOTOS

THE WRITER spent the greater part of the summer of 1918 at Malheur Lake, Harney County, Oregon, in the interests of the United States Biological Survey, and, while there, accumulated the bulk of the bird notes that make up this article. There will be found, however, a few additional items from other localities, principally from Clear Lake, Modoc County, California, and from the territory between Malheur Lake and Klamath Falls, the latter having been covered by auto in company with Dr. G. W. Field and Mr. Stanley G. Jewett, both of the Biological Survey.

More than four months, from April 23 to August 27, were spent at Malheur Lake, so that the notes from that immediate section may be considered fairly complete for this season of the year, but those from other localities are more or less fragmentary. From April 4 to April 16 was spent at Clear Lake and, though quite a number of species of birds were observed at this time, some of the regular summer visitants had either not appeared at all or were present in small numbers at the date of my departure. The auto trip from Malheur Lake to Klamath Falls occupied nine days, from August 27 to September 4, inclusive. While on this trip we travelled almost continuously during daylight hours and undoubtedly missed seeing many species of birds that were common in the country traversed. The principal points touched at this time were Diamond Valley, Warner Valley (Adel and Plush), Warner Mountain, old Fort Warner (east side of Warner Mountain), Paisley, Summer Lake, Silver Lake, Bear Flat, and Upper Klamath and Chiloquin marshes.

Malheur Lake, one of the best water-bird nesting grounds in the United States, is situated in Harney Valley, Harney County, Oregon. The lake and surrounding tule marsh cover approximately 75,000 acres. The water body, while several miles in width, is very shallow, being only from six to seven feet deep at high water. During the latter part of the past summer—one of the driest in the history of the region—the water in the lake probably averaged less than one foot in depth, and the surrounding tule marshes were mostly dry. The two principal streams that feed the lake are the Blitzen River, running in from the south, and the Silves River, from the west. Along these streams a few miles back from the lake are straggling groves of willows, the only timber in the entire locality, with the exception of occasional cottonwood trees planted around ranch houses. On the hills directly surrounding Harney Valley are scattered groves of stunted junipers, and the rolling country between the hills and the lake is mostly covered with sage (*Artemisia tridentata*) and greasewood (*Sarcobatus vermiculatus*). Around the outer edge of the swamp are extensive wild hay fields that furnish nesting grounds for many ducks and other species of ground-nesting birds.

During my entire stay in the region I boarded at the Alva Springer Ranch, which lies on the Blitzen River at the south end of the lake. There are living springs on this ranch which form a pond known as the Spring Branch, flowing into the Blitzen. Where this spring water empties into the river there are

numerous sand bars which are resorted to by many waders and other birds. As the birds in this locality are entirely undisturbed during the summer, many notes were obtained here. Mr. and Mrs. Alva Springer and son Ed have resided in the locality for many years and, having a good general knowledge of birds, were able to furnish considerable helpful information. Dr. L. C. Hibbard, of Burns, who has studied the birds of the region for a number of years, also supplied data of value.

Though the lake and swamp were rather thoroughly covered, and I believe very little bird life was overlooked in this immediate section, the surrounding hill region was hardly touched, and it is very probable that many species occur here regularly that were not seen by me at all. Also, as a very limited area was covered during the migration season, the notes obtained on the migratory birds must be regarded as far from complete. In the following list of birds observed, unless otherwise stated, the notes refer to Malheur Lake.

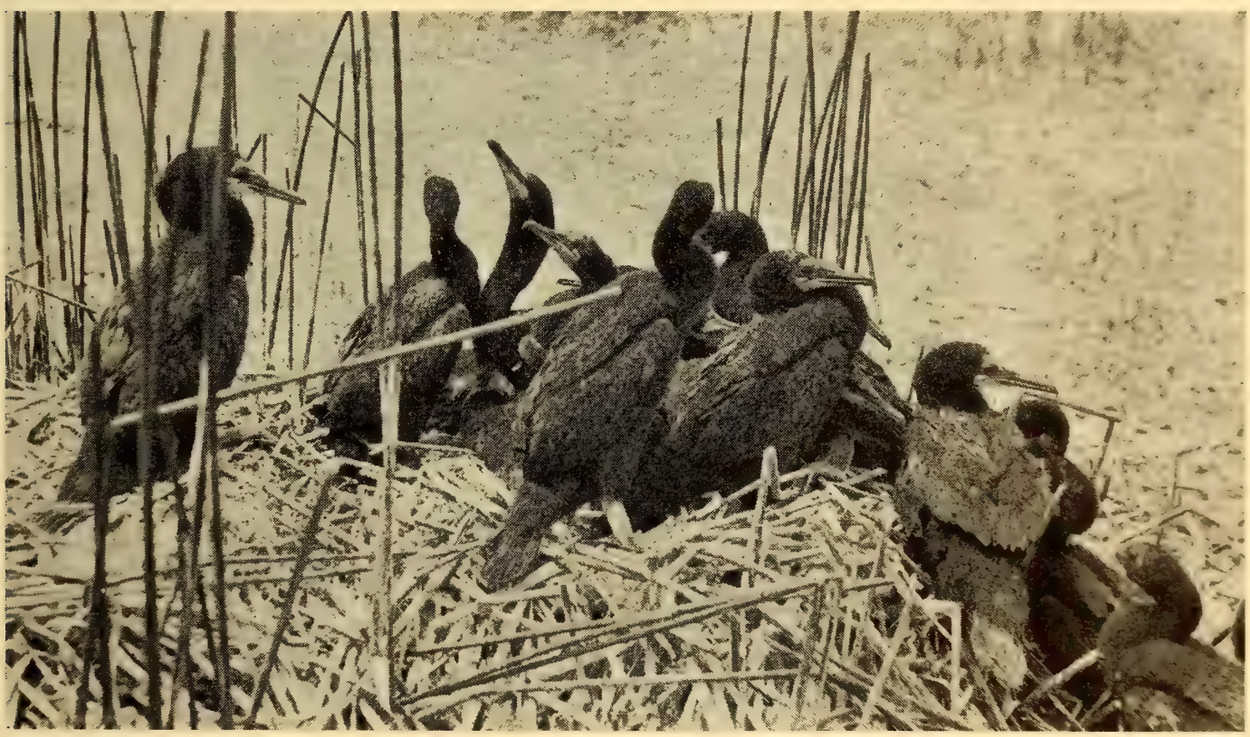

Fig. 40. Young Cormorants at Malheur Lake, Oregon, June 18, 1918.

Aechmophorus occidentalis. Western Grebe. Nesting abundantly at Malheur Lake; most plentiful along north and west sides. Some young noted as early as June 7, but the species did not begin to nest generally until about June 10. After this date many nesting colonies were visited. These colonies consisted of from two or three to twenty nests each, and were situated in tule patches, generally near the open water. Four was the usual complement of eggs, no nests containing more than this number being seen. The species was also noted at Clear Lake during early April.

Colymbus auritus. Horned Grebe. One bird seen on Malheur Lake May 12, another June 7, and three more June 14, all adults in high spring plumage. Upon seeing these birds present so late in the year, it was hoped to find them nesting, but they were not further noted, though carefully sought for, and I am forced to conclude that they were present only as migrants.

Colymbus nigricollis californicus. Eared Grebe. Breeding abundantly in colonies in tules at Malheur Lake, well out toward edge of open water. As with the Western Grebe, a few scattering pairs evidently nest much earlier than the great majority, as a few young were noted June 14-15, at which time the bulk of the species was just beginning to nest. A very peculiar feature noted was the small number of eggs laid to the

nest. Though several hundred nests were examined, in no case were more than three eggs seen in a nest, and in many instances the birds were incubating one or two eggs.

Podilymbus podiceps. Pied-billed Grebe. Breeding rather commonly in Malheur Swamp, though much less plentiful than the last and differing considerably in nesting habits. The nest of the Pied-billed Grebe was rather rare near the open water but was fairly common in ponds in the swamp well back toward the hay lands. It also nests earlier than the last, beginning to lay the first week in May and continuing throughout the month. Young were noted early in June. Six or seven eggs was the usual complement, eight was occasional, and nine was found once. The nests were larger and more substantially built than those of *C. n. californicus*, and were always floating, whereas those of the other species are often built on supporting tules.

Larus californicus. California Gull. At Malheur Lake this and the next species were nesting on Pelican Islands, a chain of small grass-covered islets near east end of lake. The gull colony was on parts of two of these islands, the two sections of the colony being separated by a channel of water about fifty yards wide. There were only about sixty pairs of *L. californicus* nesting, they being greatly outnumbered by the next species. Their nests were all in the same corner of the colony on a strip of bare ground and, although they were immediately contiguous to those of *delawarensis*, the nests of the two species did not intermingle. The California Gull began to nest about June 7, but it was not through laying until ten days later. On the ninth of July a severe hail storm occurred that played sad havoc in the gull colonies, killing a large percentage of the downy young. This gull suffered very little, however, only two dead downies being noted.

Larus delawarensis. Ring-billed Gull. By far the most abundant of the gulls nesting on Pelican Islands, there being about five hundred pairs in the colonies. Only a small percentage of the nests were on the bare ground like those of the last species, most of them being in the short grass. They began to lay about June 5 and the majority of the clutches were complete by June 15. There was evidently some confusion among them as to location of their nests, as one nest containing five eggs and several with four eggs were noted. In most of these cases two distinct types of eggs were in the clutch and they were probably the product of different females. It is feared that a small number of the young of this gull survived the summer. Over three hundred dead downies were counted that were killed by the hail storm July 9, and many of the young that survived this disaster were apparently stricken with disease at about the time they were beginning to fly and died in considerable numbers.

While the gulls had not yet begun to nest at Clear Lake at the time of my departure from that section, they were present in some numbers at the usual breeding grounds on islands in the lake. These islands were visited April 10, on which date about two thousand gulls were present. In direct contrast to the gulls at Malheur, at least ninety percent of these were *californicus*, the remainder being *delawarensis*.

Sterna caspia. Caspian Tern. First seen at Malheur May 14.. The breeding colony consisted of about one hundred pairs and was situated on a sandy section of the shore of one of the Pelican Islands directly adjoining one of the Ring-billed Gull colonies. The Caspian Terns began to lay about June 5 and had apparently finished by June 15. Most of the nests were hollows in the sand with very little lining. The usual number of eggs was two, though several nests contained three and one held four. Thirty-two dead downies were counted after the hail storm previously mentioned.

Sterna forsteri. Forster Tern. By far the most abundant tern in the Malheur region, nesting in tules entirely around the lake, though more plentiful on south and west sides. The nesting colonies, however, did not extend back into the swamps but were in tules in the deeper water, generally within a half mile of the open water of the lake. Two types of nesting sites were generally used, one being the tops and sides of muskrat houses and the other on broken-down tules floating on the water. The birds using the first type of site built no nest whatever, laying the eggs on the tules composing the muskrat house, while those using the second location generally built a substantial nest composed of dead tule stalks. This species began to lay about June 5 and the nesting season was considerably extended, some eggs being laid as late as the first week in July. Three eggs was the usual complement, though two was rather common and four occasional. First young were seen June 28, and they were noted flying by July 20.

Some of the downies on the muskrat houses were killed by the hail July 9. The nests built by the terns, themselves, were better protected, being more or less covered by sheltering tules, and no damage was noted in these localities.

Hydrochelidon nigra surinamensis. Black Tern. Common breeding bird at Malheur but much less plentiful than the last. Small colonies were found in tules near edge of open water in several different localities. They began laying about June 5; first young were seen July 8, and some of the young were flying by July 20. The nests were fairly compactly built of dead rushes and were situated on broken-down tules floating on the water. The eggs were two or three in number and varied greatly in color and markings. The adult birds began to take on the fall plumage about the middle of July, and the species was quite scarce on the lake the latter part of August, many apparently having left the locality by this time. Eight or ten pairs of Black Terns were observed nesting in a tule patch in a hay field several miles from the lake, June 26.

Phalacrocorax auritus (subsp.?). Cormorant. Though the cormorants of both Clear and Malheur lakes have been previously referred frequently to *P. a. albociliatus*, the Farallon Cormorant, I am very doubtful as to the correctness of this identification, particularly as regards the bird of the latter locality. A great many of these birds, while in

Fig. 41. Young White Pelicans at Malheur Lake, Oregon, June 18, 1918.

fresh spring plumage, were examined carefully at close range with glasses and in no instance was I able to detect any trace of the white plumes supposed to be characteristic of *albociliatus*. I am inclined to believe, therefore, that this bird may prove referable to the eastern form, *P. a. auritus*.

At Clear Lake on April 10 about one hundred pairs of comorants were beginning to nest on one of the small islands. At this date many nests were about completed and a few contained one or two eggs each, no full clutches being noted.

At Malheur Lake about one hundred pairs of birds were found nesting on broken-down tules near the northeast end of the lake June 18, on which date most of the nests contained young of different ages—some being nearly as large as the adults (fig. 40)—though two or three nests still held eggs. Most of these nests had been built up a foot or two from their foundations and had apparently been used for several years.

Pelecanus erythrorhynchos. White Pelican. From four hundred to five hundred pairs noted on islands at Clear Lake April 10. At this date about one hundred and fifty nests were noted, many of which contained one or two eggs each.

At Malheur Lake about four hundred pairs were nesting on broken-down tules in company with cormorants and blue herons. At the time of the first visit to this colony,

June 18, about half the young were already hatched, some being, apparently, nearly a month old (fig. 41). The rest of the nests contained eggs in various stages of incubation. In most cases the eggs were laid on the broken-down tules with little or no attempt at nest construction. They were generally two or three in number, rarely four. The pelicans and cormorants were feeding principally on fish of the minnow family which are considered of no value for human consumption. The remains of a rainbow trout found in the colony was the only real food-fish noted.

Mergus americanus. American Merganser. Eleven birds seen at Clear Lake April 10. Noted several times at Malheur in late April and early May, one bird May 25, six birds July 3, ten or a dozen August 8, and rather common thereafter. Two birds seen on stream near Adel September 2. It is very probable that *M. serrator* also occurs in the region, but it was not identified.

Lophodytes cucullatus. Hooded Merganser. Single bird seen April 5 at Clear Lake.

Anas platyrhynchos. Mallard. Rather common at Clear Lake; nest containing four eggs found in this locality April 10. At Malheur Lake nests abundantly in hay fields, both inside and outside reservation boundary. The earliest of the nesting ducks in the vicinity, beginning to lay the latter part of April, but nesting most abundantly from May 15 to 31. The most common nesting site is on the ground in long grass, though often found in sides of haystacks, under scattering bunches of hay and, occasionally, on dry ground in sage-brush. Eggs generally from eight to twelve in number. As soon as the young leave the nest they are taken out onto the open water of the lake, and during late summer the species is rare in other localities.

Chaulelasmus streperus. Gadwall. Probably nearly as abundant as the last species at Malheur, but nests, on an average, much later, being the last duck to finish incubating. Nesting localities very much the same as those of the mallard excepting that it was not found in haystacks. (See fig. 42). Many nests were seen in the hay fields and one in the sage-brush. First nest, containing seven eggs, found June 1; height of nesting season June 20 to 30. First young seen July 5. The eggs in a nest in the Springer field did not hatch until August 8, and two broods of young about two weeks old were noted August 22. From seven to eleven eggs is the usual complement, though one brood of fourteen young was seen.

Mareca americana. American Widgeon. Not noted in spring, though probably occurs at this season. First seen in fall migration July 31, and became rather common during August.

Nettion carolinense. Green-winged Teal. Common at Clear Lake during my visit in April. First noted in fall at Malheur July 31; common after early August.

Querquedula discors. Blue-winged Teal. An adult male seen at Malheur June 13 was the only one identified. It is difficult to distinguish between this and the next species, however, particularly in case of the females, and it is possible that *discors* nests at Malheur in very small numbers.

Querquedula cyanoptera. Cinnamon Teal. Abundant nesting bird at Malheur in hay lands both inside and outside reservation line. Began laying early in May, most plentifully during month of June. Many nests of this and other ducks are destroyed annually by ravens, coyotes, skunks and mink. Careful observations in the Malheur region seemed to show that at least fifty percent of the ground-nesting ducks' eggs are destroyed by these agencies, ravens and skunks probably doing the most damage.

Spatula clypeata. Spoonbill. Breeds at Malheur in small numbers. The only nest positively identified as belonging to this species was found on May 31 and contained eleven eggs. It was situated on the ground in a hay field and was indistinguishable in construction and situation from nests of other ground-nesting ducks. Spoonbills were seen occasionally throughout the summer.

Dafila acuta. Pintail. Pair seen at Clear Lake April 10. Noted occasionally during the summer at Malheur, so probably breeds in small numbers, though no nests were identified. In fall the species began coming in from the outside about July 31 and became common the first week in August. Female with five half-grown young seen on canal in Diamond Valley August 28.

Marila americana. Redhead. Breeds abundantly in the tules at Malheur Lake,

mostly during month of June. Some downies were seen as early as June 7, and they were still in evidence late in July.

Marila marila. Greater Scaup. **Marila affinis.** Lesser Scaup. Scaup ducks were plentiful at Clear Lake in April and both species identified, though, owing to their similarity, in most cases identification was impossible, and I am in doubt as to the comparative abundance of the two. At Malheur they were fairly common in spring until about May 10, and in fall after August 5. They were also noted occasionally in summer but, in this locality, I was never able to approach closely enough to be sure of the species.

Marila collaris. Ring-necked Duck. The only time that this duck was positively identified was on April 6 at Clear Lake, when three pairs were observed at the mouth of Willow Creek. They were approached closely and carefully examined with glasses. The bill markings, white spot on throat and ring on neck were plainly seen on the male birds.

Clangula americana. Golden-eye. Noted several times on Blitzen River in late April and early May.

Charitonetta albeola. Bufflehead. Female seen at Clear Lake April 7. Fairly common at Malheur in spring until about May 10.

Fig. 42. Nest of Gadwall at Malheur Lake, Oregon.

Erismatura jamaicensis. Ruddy Duck. Breeding abundantly in tules at Malheur Lake, generally fairly close to open water. Several nests noted in sides of muskrat houses. Bulk of nesting in June. Young seen as early as June 7 and as late as early August.

Chen hyperboreus hyperboreus. Lesser Snow Goose. Four birds seen at Clear Lake April 6. Common locally on meadowlands between Malheur Lake and Burns in late April. Single bird seen on Blitzen River May 12 and two more in same locality June 21.

Anser albifrons albifrons. White-fronted Goose. About twenty-five birds seen at Clear Lake April 15.

Branta canadensis canadensis. Canada Goose. Forty-six nests examined on various small islands in Clear Lake. Began to lay the latter part of March. Most of the nests contained from four to seven eggs, though eight or nine were seen occasionally, ten in one instance and twelve in another. It may be that these larger sets were the product of more than one female. Also in two nests examined were two addled eggs of last year together with newly laid eggs. Most of the nests were on bare ground among the sage-bushes but several were built among the rocks and one was in small cave in

rocks three feet back from entrance. At Malheur the nesting sites were entirely different, the nests being usually on broken-down tules or on top of muskrat houses. The young mostly hatched the first week in May. For about three weeks after hatching they remain on land, then accompany their parents to the water and out onto the open lake, where they remain during rest of summer.

Branta canadensis minima. Cackling Goose. Common in late April on fields between Malheur Lake and Burns. It is probable that *B. c. hutchinsi* also occurs in migrations but it was not identified.

Plegadis guarauna. White-faced Glossy Ibis. First seen May 23 near Springer Ranch. About one hundred pairs nested in tules along west side of Malheur Lake. Began to lay about June 1, and some young were flying the last week in July.

Botaurus lentiginosus. Bittern. Nesting rather commonly in marsh lands along border of Malheur Reservation. Two nests found in tule marsh May 20, one containing five eggs and the other five newly hatched young. The young leave the nest when a few days old and remain hidden in the tules until nearly full grown.

Ixobrychus exilis. Least Bittern. Breeds rather commonly in tules on some parts of Malheur Lake, mostly well out toward open water. Young flying by middle of July.

Ardea herodias (subsp.?). Blue Heron. Though Grinnell in his California list refers the Modoc County blue heron to the variety *hyperonca*, he informs me that he has not compared specimens from this locality, and I think it very possible for geographical reasons that the Clear Lake bird will prove referable to *A. h. treganzai*. Furthermore, it seems almost certain that the Malheur Lake bird would belong to this form.

About one hundred nests of the blue heron were noted on the various islands in Clear Lake, mostly on tops of low bushes, though some were on the rocks and on the ground. Some nests contained complements as early as April 6, though it is probable that many birds had not yet nested. At Malheur Lake over six hundred pairs were noted nesting in tules in different localities. Some of these were in the colony with pelicans and cormorants, some with ibis and night herons, and others with the egrets. In this locality they nested mostly in May. Some young were flying a little by June 18. In late summer half-grown muskrats form one of the items of this bird's diet.

Herodias egretta. Egret. Though this bird was seen frequently in early summer at Malheur Lake, considerable difficulty was experienced in locating the nesting colony. Local people who were familiar with the species stated that it formerly nested in trees along the Blitzen and Silves rivers, and it was in these localities that I first sought for it. Not finding it here, attention was turned to the tules along the southern border of the lake where the birds had been most frequently seen. On June 28, while rowing along the outer edge of the tules at the southern end of the lake, I finally located the colony in two small tule patches about three miles east of the mouth of the Blitzen River. Twenty pairs of the birds were nesting at this date, three nests containing eggs, apparently heavily incubated, and the other nests containing young of various ages, from newly hatched to half-grown ones that were able to walk around among the tules. The nests were built on bent down tule stalks (figs. 43, 44), much in the same fashion as nests of the ibis. Some were within a foot of the water and others nearly four feet up. They were large and rather well made of tule stalks and in two instances contained branches of greasewood that must have been carried at least a mile. The nest complement was from three to five in number, usually four.

Nycticorax nycticorax naevius. Black-crowned Night Heron. Pair seen on island at Clear Lake April 10. About five hundred pairs nesting in tules along west side of Malheur Lake in company with blue herons and ibis. Still some eggs as late as June 7, though large young were common on same date.

Grus canadensis. Little Brown Crane. Common on fields between Malheur Lake and Burns in late April.

Grus mexicanus. Sandhill Crane. Nests generally in swampy localities throughout the region, but apparently nowhere in large numbers. There were probably twenty-five pairs nesting in the swamps around Malheur Lake and, from what could be learned from residents, it is more plentiful at Diamond Swamp and Warner Lake than at Malheur. Five or six pairs raised their young in marshes within two or three miles of the Springer Ranch, the adults being seen daily but no nests found. Old settlers state that this bird is becoming scarcer yearly.

Rallus virginianus. Virginia Rail. A single bird of this species seen May 22 in Malheur Marsh was the only rail noted by me.

Porzana carolina. Sora Rail. Dr. Hibbard has eggs of this bird taken in the Malheur region. Mr. Springer states that on different occasions while cutting hay he has flushed a small dark-colored rail of some species.

Fulica americana. Coot. Seen occasionally at Clear Lake in early April. Nesting abundantly at Malheur Lake, both in wet meadows and in tules around lake. Began to

Fig. 43. Nest of Egret, on broken-down tules, in southern end of Malheur Lake, Oregon, June 28, 1918.

lay early in May and first young were noted June 7. On August 24 I was fairly certain that I saw a Florida Gallinule in the marsh but it disappeared in the tules before its identity could be assured.

Steganopus tricolor. Wilson Phalarope. So far as was learned, this bird did not nest on Malheur Reservation the past summer. It appeared early in May but left the vicinity of the lake shortly afterward. It nested in some numbers on wet fields between

the lake and Burns, and full grown young appeared at the lake with their parents about July 12, becoming quite common shortly after this date.

Recurvirostra americana. Avocet. Breeds abundantly at Malheur, nesting in many different localities, both on the reservation and outside its boundaries. The salt grass flats along south and east sides of lake were favorite nesting grounds, as were some parts of Pelican Islands. There were also many small colonies around the borders of shallow ponds in various sections. Nesting began in May and was at its height during the month of June.

Himantopus mexicanus. Black-necked Stilt. Though this bird has been previously reported as nesting at Malheur Lake in small numbers, I failed to see it at all. Mr. Springer's grandson, Wilbur, informed me that he saw two birds near the ranch in late May, and Dr. Hibbard knew of one pair nesting in a field between the lake and Burns.

Gallinago delicata. Wilson Snipe. Common at Clear Lake in early April. A few seen at Malheur in late April and they again appeared July 23, after which date they were common until August 1; occasional thereafter.

Macrorhamphus griseus scolopaceus. Long-billed Dowitcher. Common migrant at Malheur Lake. Noted as follows: May 13, flock of thirty birds; May 14, flock of one hundred; May 21, one bird; July 16, one bird; July 18-19, two birds; August 24, flock of thirty.

Pisobia minutilla. Least Sandpiper. Two birds seen at Clear Lake April 10. Fairly common at Malheur in late April and early May, and from July 9 to August 22.

Pelidna alpina sakhalina. Red-backed Sandpiper. Several seen near Springer Ranch May 14.

Ereunetes mauri. Western Sandpiper. Appeared at Malheur July 16 and remained rather common through August.

Totanus melanoleucus. Greater Yellowlegs. Seen occasionally at Malheur in early May; several noted July 9; rather common thereafter.

Totanus flavipes. Lesser Yellowlegs. My son reported three small yellowlegs on the Spring Branch August 18, and on August 24 Dr. Field and the writer saw six or seven birds on Blitzen River where it empties into the lake.

Helodromas solitarius cinnamomeus. Western Solitary Sandpiper. Two birds seen between Malheur Lake and Burns May 10, and one on Blitzen River near the lake August 24.

Catoptrophorus semipalmatus inornatus. Western Willet. Like several other waders, the Willet breeds on wet meadow lands between the lake and Burns, but not, apparently, on the reservation. One or two birds were seen on the Spring Branch July 13, and about July 20 adults with grown young appeared in small numbers. These disappeared again about August 10.

Actitis macularius. Spotted Sandpiper. Fairly common at Malheur Lake throughout the summer, but no signs of its breeding were found. While birds were observed frequently, in no case did they display the actions usual to nesting birds of the species.

Numenius americanus occidentalis. Northern Long-billed Curlew. Common on wet meadows in Harney Valley region in late April but much less so through the summer. Probably not more than a dozen pairs nested around the borders of Malheur Lake. Nest containing an addled egg noted June 1, and one or two broods of young seen in July and August. Also nests on meadow lands between the lake and Burns.

Oxyechus vociferus. Killdeer. Common around lakes and ponds throughout entire country traversed. Abundant at Malheur Lake, where young appeared early in May.

Oreortyx picta plumifera. Plumed Quail. Seen along streams in mountains west of Warner Valley.

Lophortyx californica vallicola. Valley Quail. Rather common locally from Clear Lake northeast to Diamond Valley.

Phasianus torquatus. Ring-necked Pheasant. Fairly common in meadow lands in vicinity of Burns. While harvesting alfalfa this summer, Dr. Hibbard found a nest of the species.

Centrocercus urophasianus. Sage Grouse. Common in sage-brush around borders of Clear Lake; also common locally in sage region from Klamath Falls to Malheur Lake. Pair seen on Blitzen River three or four miles from the lake June 9. Particularly abundant along east slopes of Warner Mountain.

Cathartes aura septentrionalis. Turkey Vulture. Seen frequently throughout entire region traversed.

Accipiter cooperi. Cooper Hawk. One seen June 9 along Blitzen River, and another near Adel September 2.

Circus hudsonius. Marsh Hawk. Common resident of marshy sections. Breeding plentifully around Malheur Lake. Several nests noted in May and early June; first young seen May 20. In fall does considerable damage to young poultry. This latter characteristic of the species was entirely new to the writer, as the Marsh Hawk had always been considered strictly a beneficial bird. Mrs. Springer stated that this bird killed her young chickens, and the writer's personal observations fully confirmed the fact. Have never noted this in any other locality and it may be only a local habit.

Buteo borealis calurus. Western Red-tail. Rather common in most parts of the region, though rare in summer around Malheur Lake, probably owing to absence of trees. Nest containing three eggs was noted in juniper tree near Clear Lake April 7.

Buteo swainsoni. Swainson Hawk. Two birds seen near Malheur Lake June 26 and two the day following; fairly common during August. Common along most of the

Fig. 44. Nest and young of Egret at Malheur Lake, Oregon, June 28, 1918.

route between Malheur and Klamath Falls in late August and early September. Particularly abundant in canyons on slopes of Warner Mountain.

Archibuteo lagopus sancti-johannis. Rough-legged Hawk. Seen occasionally in late April between the lake and Burns, as also between Burns and Bend.

Aquila chrysaëtos. Golden Eagle. Rather common in mountainous sections.

Haliaeëtus leucocephalus leucocephalus. Bald Eagle. Two birds seen at Clear Lake April 8.

Falco mexicanus. Prairie Falcon. Breeds plentifully in hill region surrounding Harney Valley. In fall, appears in vicinity of the lake in some numbers in pursuit of wild fowl and poultry.

Falco peregrinus anatum. Duck Hawk. Fairly common in August with last species, but less plentiful.

Falco columbarius columbarius. Pigeon Hawk. Pigeon hawks were occasionally seen near Malheur Lake in August. Two specimens examined were clearly referable to the above subspecies.

Falco sparverius sparverius. Sparrow Hawk. Noted frequently throughout the region.

Pandion haliaetus carolinensis. Osprey. Pair of birds seen daily at Clear Lake; also seen along Klamath River.

Asio flammeus. Short-eared Owl. Common breeding bird in Malheur marshes. Three nests examined, as follows: One near Springer Ranch contained two young and five eggs May 13; two nests on Pelican Islands June 12 held, respectively, seven eggs, hatching, and four eggs, apparently slightly incubated. In several instances remains of small birds were found at nests.

Bubo virginianus pallescens. Western Horned Owl. Generally common. Nest containing two eggs, apparently on point of hatching, noted in juniper tree near Clear Lake April 7. Birds seen at Fort Warner and in Diamond Valley. Heard once in late April at Malheur Lake. Remains of two birds killed during past winter seen at Springer Ranch.

Speotyto cunicularia hypogaea. Burrowing Owl. Rather common in fields bordering Malheur Lake.

Ceryle alcyon caurina. Western Belted Kingfisher. Rather rare at Clear Lake; also at Malheur.

Sphyrapicus thyroideus. Williamson Sapsucker. Noted in woods bordering Chiloquin Marsh.

Colaptes cafer collaris. Red-shafted Flicker. Fairly common throughout region.

Asyndesmus lewisi. Lewis Woodpecker. Single bird appeared at Springer Ranch May 11 and remained until May 14. Also seen in early September near Silver and Upper Klamath lakes.

Chordeiles virginianus henryi. Western Nighthawk. First seen at Malheur June 6; abundant during eclipse of sun, 4 p. m., June 8; common throughout rest of summer. During daytime often noted sitting on fence posts along country roads.

Selasphorus rufus. Rufous Hummingbird. **Selasphorus platycercus.** Broad-tailed Hummingbird. Hummingbirds were noted occasionally throughout most of the region covered, though not at Malheur Lake. A male *rufus* was seen at Burns August 25. *Platycercus* was identified by Jewett at Adel, on Warner Lake, August 29. None of the others seen was positively identified.

Tyrannus tyrannus. Eastern Kingbird. First seen at Malheur, a pair May 5; common shortly after that date. Nesting during latter part of June. One nest examined was in broken-out nose cavity of cow's skull hanging on barbed wire fence. The young in this nest were killed by hail July 9.

Tyrannus verticalis. Western Kingbird. Common summer visitant to Harney Valley. Arrived about May 1; nesting by May 20.

Sayornis sayus. Say Phoebe. Fairly common in summer, nesting in usual situations.

Empidonax griseus. Gray Flycatcher. Fairly common summer visitant to the sage-brush country bordering Malheur Lake. First noticed May 18, and seen frequently from that time until August 4. After this date little attention was given to the particular section inhabited by the species, consequently it was not further noted, though it probably remained in the region considerably later.

Otocoris alpestris merrilli. Merrill Horned Lark. Rather common at both Clear and Malheur lakes and in suitable localities between these two points.

Pica pica hudsonia. Magpie. Common locally throughout the region. Nesting in willows along Blitzen and Silves rivers a short distance from lake. Several nests examined contained newly hatched young May 12; some young out of nest by May 28.

Cyanocitta stelleri frontalis. Blue-fronted Jay. Seen at various points in timbered country from Clear Lake northeast to Fort Warner.

Aphelocoma californica immanis. Long-tailed Jay. Common in brushy sections from Clear Lake northeast to Warner Valley.

Perisoreus obscurus griseus. Gray Jay. Common at Bear Flat, twenty miles west of Silver Lake, evening of September 3.

Corvus corax sinuatus. Raven. Common in hill and mountain sections. Nesting abundantly in bluffs in hills around Malheur Lake. Made regular trips to swamp to obtain eggs, upon which it subsists largely in summer.

Nucifraga columbiana. Clarke Nutcracker. Three birds seen at old Fort Warner September 1.

Dolichonyx oryzivorus. Bobolink. Rather common breeding bird in hay fields around borders of Malheur swamps. First seen May 20; noted feeding young July 11; young flying July 23.

Molothrus ater artemisiae. Nevada Cowbird. Common around barnyards and stock pastures. At Malheur began to breed the latter part of May. Disappeared about August 20 and was not seen thereafter.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird. Abundant summer resident of the Malheur region, nesting in tules well out toward open water of lake. Began to lay about May 10 and eggs were noted as late as July 1. Large young seen June 7.

Agelaius phoeniceus nevadensis. Nevada Redwing. Common in swampy districts throughout the region. At Malheur nesting abundantly in wet meadows and swamp lands, but not close to open water as does last species. Began to lay about May 15 and eggs were seen until late in June. Favorite nesting site was in tall grass in hay fields; very few nests found in tules.

Sturnella neglecta. Western Meadowlark. Common in grassy country in most localities visited.

Icterus bullocki. Bullock Oriole. Nests generally throughout the region but, apparently, not in immediate vicinity of Malheur Lake, owing to lack of suitable trees. First seen at Springers' May 13; noted occasionally for several days after this date, then disappeared. Female seen in same locality August 17.

Euphagus cyanocephalus. Brewer Blackbird. Abundant in lower country everywhere. At Malheur nesting in sage-brush and greasewood around outer edge of swamp. Began to lay first week in May.

Carpodacus mexicanus frontalis. House Finch. Seen in many different parts of country visited but, apparently, not very abundant anywhere.

Loxia curvirostra bendirei. Bendire Crossbill. Small flock seen at Bear Flat, 20 miles west of Silver Lake, September 4. Pair of adults taken by Jewett at this time were apparently about to breed.

Pooecetes gramineus confinis. Western Vesper Sparrow. One of the typical birds of the region. At Malheur Lake full-grown young appeared late in June.

Passerculus sandwichensis nevadensis. Nevada Savannah Sparrow. Common around both Clear and Malheur lakes and in most of the country intervening. Breeding plentifully in meadow country around border of swamp. Favorite nesting site was on ground in short grass, but several nests were found under small bunches of old hay that had laid on the ground since last year's harvest Many nests noted between May 10 and June 4. Four or five eggs is the usual complement, though three is occasional.

Chondestes grammacus strigatus. Western Lark Sparrow. Fairly common at Malheur in late May and early June. Apparently does not nest near the lake.

Zonotrichia leucophrys gambeli. Gambel Sparrow. Common in brush near Clear Lake in early April; also seen in hills bordering Warner Valley August 30.

Spizella passerina arizonae. Western Chipping Sparrow. Several seen in brush near Malheur Lake May 14, and single bird in same locality May 24.

Spizella breweri. Brewer Sparrow. Abundant breeding bird in sage-brush country bordering Malheur Swamp. First nest, containing three eggs, found May 24; latest, also containing three eggs, July 1. Height of nesting season from last week in May to middle of June. Nests in low bushes from four inches to eighteen inches above ground. Usual nest complement three, though four was seen occasionally.

Amphispiza nevadensis nevadensis. Nevada Sage Sparrow. Fairly common in sage-brush but, in Malheur region, much less plentiful than the last; also nests somewhat earlier in the season. Three nests noted, as follows: May 24, four young; June 2, one with four eggs and another with four young. The nests were considerably more bulky than those of *S. breweri*, and higher above ground, those noted being from eighteen to thirty inches up.

Melospiza melodia fisherella. Modoc Song Sparrow. Seen occasionally at Clear Lake. Rather common breeding bird at Malheur, in tules in marsh country around lake. Young out of nest seen as early as May 22. Though the song sparrow from the Malheur region has been repeatedly recorded as *merrilli*, a summer bird taken is referable to *fisherella*. This identification is confirmed by Grinnell, Swarth and Oberholser.

Passerella iliaca schistacea. Slate-colored Fox Sparrow. One bird seen at Springer Ranch August 5 and another August 18.

Pipilo maculatus curtatus. Nevada Towhee. Seen at Clear Lake and in several other localities northeast to Warner Mountain.

Oreospiza chlorura. Green-tailed Towhee. Seen on slopes of Warner Mountain August 30, and in hills between Adel and Paisley September 2.

Zamelodia melanocephala. Black-headed Grosbeak. Single bird noted in willows along Blitzen River June 2.

Passerina amoena. Lazuli Bunting. Pair seen May 12 at Springer Ranch.

Piranga ludoviciana. Western Tanager. Fairly common in spring migration at Springers', from May 10 to June 5.

Progne subis (subsp.?). Purple Martin. Male bird seen at Malheur Lake May 10.

Petrochelidon lunifrons lunifrons. Cliff Swallow. Abundant breeding bird throughout the region. Nesting in abandoned shacks, barns and out-houses all over Harney Valley. Began to lay about May 15. First seen at Clear Lake April 10.

Hirundo erythrogastra. Barn Swallow. One seen at Clear Lake April 4 and another April 7. Nesting commonly under bridges in many parts of Harney Valley. Began to lay about May 20; young just leaving nest seen as late as August 19.

Iridoprocne bicolor. Tree Swallow. Common in spring at Malheur in company with other swallows. Noted from May 5 until June 7; not seen thereafter. Dr. Hibbard has found the eggs at Burns.

Riparia riparia. Bank Swallow. Undoubtedly nests within a short distance of Malheur Lake, but breeding colony was not seen. It was rather common during May, the latest spring bird being noted May 30. Next seen July 12, old birds with young common July 13-14, and abundant during latter part of July and month of August.

Bombycilla cedrorum. Cedar Waxwing. Small flock seen in junipers near Clear Lake April 8.

Lanius ludovicianus excubitorides. White-rumped Shrike. Fairly common throughout region. Nest containing six eggs noted in sage-brush June 2.

Vireosylva gilva swainsoni. Western Warbling Vireo. Pair seen along Blitzen River May 18, and another pair in same locality August 4.

Dendroica aestiva aestiva. Yellow Warbler. First noted at Springers' May 15; became fairly common shortly after this date and remained so through the entire summer. Nest containing five eggs noted in sage-bush June 5. No specimens were taken and the bird was assigned to above form on strength of ranges as given in last A. O. U. Check-List.

Dendroica auduboni auduboni. Audubon Warbler. Noted at Clear Lake April 13; fairly common at Malheur from late April to May 10; several seen May 16, and one bird June 2. A bird seen August 18 at Springer Ranch looked very much like *D. coronata* but may have been an immature of *auduboni*.

Geothlypis trichas occidentalis. Western Yellowthroat. First seen at Malheur Lake May 12; became rather common shortly afterwards, and remained so during entire summer. Was generally to be found in marshy sections among bunch grass, and this was undoubtedly where it nested, though no nests were observed. Full-grown young were plentiful in late July and August.

Anthus rubescens. Pipit. Rather common at both Clear and Malheur lakes, some remaining in the latter locality as late as May 15.

Oreoscoptes montanus. Sage Thrasher. Common in the sage country in most of region visited. Nested in some numbers in vicinity of Malheur Lake. From abundance of old nests and scarcity of new ones, however, should judge it to have been less plentiful than usual this year. Full-grown young were seen late in July.

Salpinctes obsoletus. Rock Wren. More or less common in rocky regions from Clear Lake to Harney Valley. Dr. Hibbard has found the nest at Burns.

Telmatodytes palustris plesius. Western Marsh Wren. Breeding abundantly in tules at Malheur Lake, from hay lands out to open water. Began to lay early in May and young out of nest were noted by June 10.

Baeolophus inornatus griseus. Gray Titmouse. Rather common in juniper timber around Clear Lake. By the middle of April was paired and apparently about to breed.

Sitta canadensis. Red-breasted Nuthatch. Noted at Malheur Lake, as follows:

One bird August 3, another August 9, two the day following, and one August 20. Also seen occasionally in wooded districts between Harney Valley and Klamath Falls.

Regulus calendula calendula. Ruby-crowned Kinglet. Common in spring at both Clear and Malheur lakes. Remained in the latter locality as late as May 15.

Myadestes townsendi. Townsend Solitaire. One bird seen in junipers near Clear Lake April 5, and several more in same locality April 7.

Planesticus migratorius propinquus. Western Robin. Common breeding bird in most sections visited, though rather rare around Malheur Lake in midsummer.

Sialia mexicana occidentalis. Western Bluebird. Fairly common at Clear Lake.

Sialia currucoides. Mountain Bluebird. Common in timbered sections throughout most of the country traversed. Occasional in brush country around Malheur Lake.

Los Angeles, California, December 21, 1918.

THE WILSON SNIPE NESTING IN SOUTHERN CALIFORNIA

By EDWARD WALL

IN the May issue of THE CONDOR I note an article by Dr. Barton Warren Evermann entitled "Nesting of the Wilson Snipe in California". In this article are given all the published records of the nesting of the Snipe in this state. Some two or three years ago I was surprised when Mr. J. R. Pemberton informed me that the printed records showed no eggs of the Wilson Snipe to have been taken in this state, and at that time I prepared at his request a short statement which I intended to send to THE CONDOR; but after discussing the matter with other collectors of twenty-five or thirty years ago concluded that it was hardly worth while and that Mr. Pemberton was not, perhaps, so well informed as he might be on the subject. Now, however, I am convinced that for some reason mention of the Wilson Snipe as a regular nesting bird in California has been omitted from the published records of earlier days and so am appending herewith the original manuscript that I intended to send in.

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My friend, Mr. J. R. Pemberton, informs me that a set of eggs of Wilson Snipe (*Gallinago delicata*) that I gave him some time since has caused quite a commotion in the oological world because of the fact that they were collected as far south as San Bernardino. I can hardly believe this but he insists that he can find no collector of today who has ever heard of the bird nesting at such a southerly point and both he and Mr. W. L. Dawson are of the opinion that it constitutes a new record.

However this may be with the collectors of today, I am certain that the old time collectors of a quarter of a century ago will find nothing to be astonished at in the record, for I personally know of several who have collected not only one set but many sets in the days when they were actively at work in the field. Personally, I have done little or no egg collecting since along in the early nineties, and there was a period of some ten years after that when I did not keep in very close touch with the ornithological or oological world and its news. Even today, although I have again started collecting an occasional skin and keeping a more or less complete record of birds and their movements, I have not been able to catch up with the progress that has been made during the interim. From 1887 to 1893 I was actively engaged in egg-

collecting and during those years gathered a sufficient number of the eggs of the Wilson Snipe to lead me to consider them as not extremely rare. So it was that when the eggs I have spoken of as having been given to Pemberton were collected, in 1894, there was little incentive to take them even after they had been discovered; and had it not been for a peculiar, to me at least, circumstance I should probably not have bothered with them.

At that time I had an uncle living on a ranch to the eastward of San Bernardino, and a portion of this land was swampy. Knowing of my interest in birds he told me one day of a bird that he saw about dusk each evening sailing around high over the swamp, that according to him would mount several hundred feet in the air and then, partially closing its wings, would swoop almost straight downward to within a few feet of the earth, the dive being accompanied by a loud whirring noise that ended in a sharp report. At first I thought that instead of a bird he had seen a large bat the name of which I did not know, but which I had been told had a somewhat similar habit. But he insisted that it was a bird, and at last I proposed that we go to the swamp together so that I might ascertain for myself just what it was that he had seen. The trip was made a few evenings later and I not only discovered that the bird was a Wilson Snipe but also by watching it discovered the eggs, and as I was not able to shoot the bird then, I took the eggs to furnish proof of what I then thought was something new in the habits of snipe. I subsequently ascertained that the habit was one that other observers already knew about and so thought no more of the eggs although I had already blown them and placed them in a cabinet. When I afterwards disposed of the greater portion of my egg collection I did not include that particular set for the reason that I had filled out no data blank, and in my hurry in packing the other eggs I did not care to take the time to look up my notes and thus obtain the necessary data.

Since learning from Pemberton that the records showed no such southerly nesting, although I had noticed that Grinnell's "List" of recent date was also lacking on that point, I have inquired of some of the old-time collectors of this locality, among them R. B. Herron, one of the oldest and most successful collectors of this section and a man known to most of us at least by the many references made to him in Davie's "Nests and Eggs of North America". He informs me that he never considered the eggs of the bird in question as being particularly rare in this section. Harry Lelande of Los Angeles also informed me that he always thought that the Wilson Snipe nested in the southern end of the state, for although he had never taken a set himself he had killed very young birds that had undoubtedly been hatched in this section.

I was somewhat surprised when I looked over Grinnell's latest list to note that he ommitted any extreme southerly records, for I felt certain that he knew of the eggs having been taken in southern California, but attributed the omission to an oversight. Since Pemberton has expressed so much surprise in the occurrence I have taken the trouble to look up my copies of letters to Dr. Grinnell when he lived at Pasadena and found that at least on one occasion I had listed among the eggs that I would be willing to exchange with him a set of the Wilson Snipe. I have exchanged several sets with other collectors, but have not taken the trouble to look up my records sufficiently to ascertain just who the eggs went to. In any event I still feel certain that there can be no possibility of such records being any cause for astonishment, and am writing this not because I think it is a new record but because Mr. Pemberton, and

according to Pemberton, Mr. Dawson also, thinks that it is a new record and one that should be published.

Since writing the above I have additional proof of the claim made by me to Mr. Pemberton that not only did the Wilson Snipe nest in the San Bernardino Valley twenty-five or thirty years ago but that it is still a regular nesting bird here. In 1917 I found a nest containing three eggs about two miles from the city of San Bernardino. In 1918 I found a nest with four young birds and an unhatched egg at the same place and this spring saw the nestlings of at least two pairs of Wilson Snipe a short distance east of San Bernardino.

While I am on this subject I feel constrained to say that while there may be no earlier published records of many of the finds being made by the later day collectors and claimed as new, I am convinced that a little investigating, by the claimant of new records, among the old time collectors might convince them that their finds are not so rare as they may suppose. It must be remembered that a quarter of a century ago the accurate recording of birds was not as systematic as at the present time and for that reason many birds were omitted from lists that were still not so extremely rare. This is not a criticism of later day collectors in any way, but simply a suggestion that before listing a find as something absolutely new to science it might be well to make an investigation that goes further than simply making the find.

I know of two such records in addition to that of Wilson Snipe. One of these is the finding of the eggs of the Dwarf Cowbird (*Molothrus ater obscurus*) in this locality. My good friend, Wilson C. Hanna of Colton, during the year of 1918 took several eggs of the Cowbird and also one or two specimens of the bird itself, and I was astonished when I learned that the record was considered as new. It so happens that I have still in my possession an egg of the Cowbird taken in the exact locality where Mr. Hanna found his last year. Mine was taken by Sheldon Sleppy somewhere about thirty years ago and I know to a certainty that he collected others there. I have never known of a bird actually being seen until Mr. Hanna took his.

This year Mr. Hanna informs me that he took a set of Anthony Green Heron and also informs me that the record is new. I have taken several sets and know of many more sets of this bird which we in those days knew as the Little Green Heron being taken in this section. While during my oological days we knew of no such bird as Anthony Green Heron, I have every reason to believe that they are one and the same bird. I have no eggs of this bird to show in proof of my statement, but I have notes made at the time of collecting them which I know to be authentic. As stated before, this is not intended as a criticism in any way, but is simply an attempt to put some facts on record now that would undoubtedly have been published many years ago had ornithological publications been as well established and as painstaking as they are today.

San Bernardino, California, July 2, 1919.

DESCRIPTION OF A NEW SUBSPECIES OF *PIPILO FUSCUS*

By HARRY C. OBERHOLSER

A SERIES of towhees from the middle portion of the peninsula of Lower California appears to belong to an undescribed subspecies. Though occupying a geographic position intermediate between *Pipilo fuscus senicula* of northern Lower California and *Pipilo fuscus albigulus*[1] of the Cape San Lucas region, they are, nevertheless, sufficiently different from both to render their subspecific separation desirable. We accordingly purpose for them the name

Pipilo fuscus aripolius, subsp. nov.

Chars. subsp.—Similar to *Pipilo fuscus albigulus* Baird, but tail longer; upper parts much darker and more grayish; breast, sides, and flanks, darker and less brownish (more purely grayish); crissum slightly, and throat decidedly, darker, and the latter not so much paler than the posterior lower parts.

Description.—Type, adult female, no. 196605, U. S. Nat. Mus., Biological Survey Collection; San Pablo, Lower California, October 3, 1905; E. W. Nelson and E. A. Goldman; original number, 11747. Pileum brown, between dark russet and hazel, the feathers edged with mouse gray; cervix, back, scapulars and rump, between mouse gray and hair brown; but the centers of the feathers on the interscapulum with a distinct wood brown tinge; upper tail-coverts between olive brown and deep olive, with narrow tips of tawny olive; tail fuscus, the rectrices with narrow tips of deep ochraceous tawny; wings rather dark hair brown, but the outer primaries narrowly edged with pale smoke gray, the remaining primaries, together with the secondaries, edged with hair brown, the outer webs of the greater wing-coverts like the centers of the feathers on the interscapulum; rest of the wing-coverts, together with tertials, margined with rather light mouse gray; lores, mastax, malar region, and eye-ring, cinnamon, more or less mixed with gray and chaetura drab; auriculars chaetura drab, streaked with pure light grayish; superciliary stripe, supra-auricular region and the sides of the neck, gray like the scapulars; posterior auricular region tinged with cinnamon; chin and throat cinnamon, but the posterior portion of the latter cinnamon buff, this throat-patch streaked or spotted all around, though in places obscurely, with chaetura drab; breast and sides of body between light drab and mouse gray; flanks of the same color but washed with ochraceous; center of breast dull white; center of abdomen creamy white; crissum between tawny and ochraceous tawny, but nearer the latter; thighs like the sides of the body but somewhat darker; lining of wing gray like the sides of the neck, but the feathers margined with whitish or pale buff.

Measurements.—Male (three specimens, from Lower California): wing, 88.5-92 (average, 90.5) mm.; tail, 103-107.5 (105.2); exposed culmen, 14.5-14.8 (14.7); tarsus, 24-26.5 (25.3); middle toe without claw, 17-18.5 (17.8).

Female (five specimens, from Lower California): wing, 81-92.5 (average, 86.8) mm.; tail, 96.5-105 (100.5); exposed culmen, 14-15 (14.4); tarsus, 25.5-26 (25.9); middle toe without claw, 17-18.8 (17.9).

Geographic distribution.—Middle portion of the peninsula of Lower California, south to Guajademi, at about 26° 30′ north latitude, and north to Santa Rosalia Bay, at about 28° 40′ north latitude.

Remarks.—This new subspecies is similar to *Pipilo fuscus senicula*, but is lighter and somewhat more grayish (less brownish) on the upper surface, more grayish on the breast, sides and flanks, nearly pure white (not buff or cream color) on the middle of the lower breast and the upper abdomen. The throat is

[1]The subspecific term *albigula* is a perfectly good Latin *adjective*, like albicoma (albicomus), and should in this connection stand as *albigulus* to agree in gender with *Pipilo*.

also paler and less uniform, i. e., distinctly lighter posteriorly, and the crissum averages paler. While *Pipilo fuscus aripolius* is intermediate between *Pipilo fuscus senicula* and *Pipilo fuscus albigulus*, it is more grayish than either, and has other good characters of its own; furthermore, it occupies a distinct geographic area, over which it is fairly uniform. There is comparatively little individual variation in the series that we have examined. An example from Santa Rosalia Bay, Lower California (no. 196602, U. S. Nat. Mus.) taken April 25, 1905, is intermediate between this new race and *Pipilo fuscus senicula*, but is apparently nearer the former. A specimen (no. 196609, U. S. Nat. Mus.) from Guajademi, Lower California, taken October 31, 1905, verges strongly toward *Pipilo fuscus albigulus*, but its grayness and darkness both above and below, together with its other characters, place it with *Pipilo fuscus aripolius*. Birds from the Rancho Santo Domingo, Lower California, 25 miles south of San Jorge at about 25° 25′ north latitude, are also somewhat intermediate but are clearly referable to *Pipilo fuscus albigulus*; while those from Yubay, Lower California, 30 miles southeast of Calamahué, at about 29° 15′ north latitude, though likewise intermediate, are referable to *Pipilo fuscus senicula*.

This new form is of considerable interest since it establishes direct and complete liaison in both geographic distribution and in characters between *Pipilo fuscus senicula* and *Pipilo fuscus albigulus*, and shows clearly that these birds, commonly regarded as distinct species, are but sub-specifically related. Since *Pipilo fuscus albigulus* intergrades individually with *Pipilo fuscus mesoleucus* of northwestern Mexico and Arizona, it follows that *Pipilo crissalis* and its races are all subspecies of *Pipilo fuscus*.

By the separation of this new race the geographic distribution of *Pipilo fuscus albigulus* becomes restricted more closely to the southern part of the peninsula of Lower California, ranging from Cape San Lucas north to about 25° 25′ north latitude.

The table given below shows the locality as well as the detailed measurements of all the specimens of *Pipilo fuscus aripolius* examined.

SPECIMENS OF *PIPILO FUSCUS ARIPOLIUS* ALL TAKEN IN LOWER CALIFORNIA BY E. W. NELSON AND E. A. GOLDMAN

U. S. Nat. Mus. no.	Sex	Locality	Date	Wing	Tail	Exposed culmen	Tarsus	Middle toe without claw
196603	♂	San Pablo	Oct. 3, 1905	92	105	14.5	26.5	18
196609	♂	Guajademi	Oct. 31, 1905	88.5	103	14.8	24	18.5
196602	♂	Santa Rosalia Bay	Sept. 25, 1905	91	107.5	14.8	25.5	17
196605	♀	San Pablo	Oct. 3, 1905	92.5	105	15	26	18.5
196606	♀	San Pablo	Oct. 3, 1905	87.5	101.5	14.2	25.5	18
196607	♀	San Pablo	Oct. 3, 1905	81	96.5	15	26	17
196604	[♀]	San Pablo	Oct. 3, 1905	88	100	14	26	17
196608	[♀]	25 miles east of San Ignacio	Oct. 19, 1905	85	99.5	14	26	18.8

Washington, D. C., May 31, 1919.

FROM FIELD AND STUDY

Fly-catching Birds.—While there is but little in my note books relating to fly-catching activities of birds other than the true flycatchers, the paragraph on this subject by Tracy I. Storer, in the "Field and Study" columns of a late CONDOR (vol. XXI, no. 3, May-June, 1915, p. 125), induces me to offer some examples which interested me greatly at the time of their occurrence. One of these happened while I was sojourning, in the role of a convalescent, at Arrowhead Hot Springs, San Bernardino County, California, in May, 1916. On several mornings, as I was sitting in the large lounging hall of the hotel there and trying to pass away the idle hours by gazing at the landscape, my attention was attracted by the peculiar actions of a San Diego Song Sparrow (*Melospiza melodia cooperi*) which would frequently fly up from a near-by hedge and apparently endeavor to enter a room at the end of the veranda by means of a closed window, in spite of the glass. This became such a regular occurrence that one warm morning I moved outside with my field glass to watch the game, thinking that it must be a very stupid bird not to have learned by repeated failures that the glass was beyond its powers of penetration. Much to my surprise the bird proved to be feasting upon house flies that nightly congregated upon the window pane, made warmer than the surrounding walls by the artificial heat of the room, and which were rendered sluggish by the chill of the early morning temperature.

The bird would fly up from the railing of the veranda, pick a fly or two off the glass, and return to its look-out perch to locate more, disappearing now and then probably to a not far distant nest as carrying capacity became strained, but returning for further supplies until the increasing warmth of the morning revivified the flies sufficiently so that they could go about their regular business of the day.

Another especially interesting case took place toward the end of June (1919) in the Bohemian Grove, near Monte Rio, Sonoma County, California. One day, as I was sitting at my typewriter in my camp, the sound of humming wings made me look up, as such a sound is not often heard inside the grove, and a female Allen Hummingbird (*Selasphorus alleni*) was seen but a few yards away, hovering about ten feet above the ground. Dancing in a broad beam of sunlight glancing through the trees just beyond her was a rather scattering swarm of medium sized flies of some sort, a little smaller than a house fly. Suddenly the hummingbird shot into their midst and picked out *eight flies* in rapid succession, poising in the center of the swarm and making a short dart at each victim. These flies seemed to be rather large sized prey for so small billed a bird and eight of them apparently sufficed, for the bird flew away and did not return.

The Nuttall Sparrow (*Zonotrichia leucophrys nuttalli*) sometimes indulges in the pastime of catching some sort of insects in such a manner as possibly to come under the head of fly-catching. I have seen this bird take insects by jumping into the air after them, with a sort of fluttering wing motion to assist them, although never quite flying after the victims. Most, if not all, of the other varieties that I have noted indulging in this exciting pastime have been enumerated in Storer's list.—JOSEPH MAILLIARD, *San Francisco, July 14, 1919.*

A California Specimen of the Sandhill Crane.—The Sandhill Crane (*Grus mexicana*) is of sufficiently rare occurrence in California at the present time to make it seem worth while to place on record the capture of a specimen from any part of the state. The close resemblance between the Sandhill and the Little Brown cranes renders it difficult to judge from sight records alone as to the relative numbers of the two species, but there is good reason to believe that while the Little Brown is still fairly numerous as a winter visitant to some sections of California, the Sandhill occurs in very small numbers at any season. Thus, for example, the extensive collecting of water birds carried on by R. H. Beck, for the Museum of Vertebrate Zoology in the vicinity of Los Baños, Merced County, during the winter of 1911-12, produced several specimens of the Little Brown Crane, but none of the Sandhill. Mr. Beck had opportunities of examining the bags of market hunters of the vicinity, from whom he obtained specimens of many species of water birds, so that his failure to procure examples of the Sandhill Crane means the ab-

sence of that bird from the bags of many hunters, not merely from that of one collector alone.

With all the collecting that we have carried on in California, it was but recently that this Museum received its first specimen of the Sandhill Crane. Two cranes were sent in by Mr. Al. Chavis, one Sandhill and one Little Brown, both shot on the Hall Ranch, near Corcoran, Kings County, California, November 17, 1918. The birds were shipped in the flesh, and prepared as study skins at the Museum. The Sandhill is an adult male, the Little Brown an immature male. That is, the latter still retains much of the rusty, immature plumage, and has the top of the head feathered, though it is apparently fully developed as to weight and measurements.

It was probably two days after the birds were killed that we received them, and the colors of eyes and of the naked skin on the head may have changed somewhat since death. These colors, however, are here noted as they appeared when the specimens arrived, comparison being made with Ridgway's "Color Standards and Color Nomenclature" (1912). Measurements are in millimeters. Stomach examinations were made by Dr. H. C. Bryant, of this Museum. Details of the two birds are as follows:

Grus mexicana, male adult (Mus. Vert. Zool., no. 29547). Weight 11 lbs., 15 oz. (no fat whatever upon the bird). Length (legs extended), tip of bill to tip of toes, 1552 mm.; length, tip of bill to tip of tail, 1170; spread wings, 2105; wing, 541; tail, 193, culmen, 151; tarsus, 239; middle toe and claw, 98. Number of rectrices, 12. Iris yellow, close to salmon-orange; the eye was somewhat sunken and filmy when examined. Feet and claws, black; upper mandible, black; lower mandible, black basally and at tip, dirty grayish at middle. Naked skin on top of head close to pomegranate purple. The last mentioned area was of a particularly difficult color to match, as it was blotchy and uneven, and the character of the skin made close comparison impossible. The best that could be done was to give the color as it appeared in general effect at a little distance, regardless of differences in detail caused by papillae, etc. Stomach contents: Vegetable matter, 100 per cent; about 325 kernels of wheat and 6 kernels of barley, together with some hulls. Much of the grain had sprouted, as though taken from a grain field where it was beginning to come up.

Grus canadensis, male immature (Mus. Vert. Zool., no. 29548). Weight, 7 lbs., 11 oz. (bird very fat). Length (legs extended), tip of bill to tip of toes, 1270 mm.; length, tip of bill to tip of tail, 940; spread wings, 1780; wing, 455; tail, 150.5; culmen, 93; tarsus, 207; middle toe and claw, 89. Number of rectrices, 12. Iris dark; naked edge of eyelid, dirty whitish; feet and claws, black; bill blackish. Stomach contents: Vegetable matter 100 per cent; about 180 kernels of wheat, with an abundance of wheat hulls and bits of straw, as though gleaned from a stubble field.—H. S. SWARTH, *Museum of Vertebrate Zoology, Berkeley, California, April 30, 1919.*

Sharp-shinned Hawks and Small Birds.—May I make a small correction in Mr. Law's account of the incident he relates on p. 27 of THE CONDOR for January-February, 1919? The hawks were Sharp-shinned not Cooper, the third female was a bird of the preceding year in the first plumage, and it, together with the male, was also shot, making a clean sweep of these pestiferous destroyers.

At the risk of being quoted as an awful example by the ultra-protectionists of the "balance of nature" school, I must repudiate any desire, whether prompted by curiosity or otherwise, of seeing an Accipiter raise a brood—I know too well at what a sacrifice of small bird life this result would be achieved.—ALLAN BROOKS, *Okanagan Landing, B. C., August 4, 1919.*

Notes from Inyo County, California.—Several weeks of the month of March, 1919, were passed by me at Lone Pine, Inyo County, California. Birds, while numerous as individuals, were hardly so in species, and only the following seem worthy of note:

Pipilo crissalis senicula. A pair was discovered in vine tangle bordering a boggy field one mile south of Lone Pine, March 22. The female of this apparent pair was secured.

Amphispiza nevadensis canescens. Careful search of congenial locations for this species failed to disclose any individuals until March 21, when one was secured. After this date it was fairly common.

Telmatodytes palustris plesius. This wren as well as *Thryomanes bewicki eremophilus* apparently are residents in the vicinity of Lone Pine, both being fairly common during my stay.

A considerable number of perennial springs exist within a radius of three miles of the village, their advent, it is said, dating from an earthquake in the early seventies. These give rise to many boggy places or "vagys", usually invaded by Johnson grass, or briers. This affords excellent covert for the Ring-necked Pheasant (*Phasianus torquatus*), and within the area delineated, it is abundant, although, I believe, introduced within comparatively recent years.—Austin Paul Smith, *Rich Mountain, Arkansas, July 12, 1919.*

The California Jay as a Bird Killer.—The literature of western ornithology contains numerous references to the damage done by the California Jay in destroying the eggs and young of small birds, but most of these accounts are unsatisfactory inasmuch as the authors fail to discriminate between what they have *actually seen* the Jay do and what they have inferred to be the work of the species. Without doubt this Jay is an enemy and an important one of the smaller species during the nesting season; but correct appraisal of the damage done can only be made after assembling numerous records of depredations definitely observed. The instance recited below, while not pertaining to a species of good repute, is offered as an example of the type of record needed with regard to all birds affected by the Jays operations.

While walking down a street in Berkeley, California, on the afternoon of May 2, 1919, my attention was attracted to a commotion among birds in a shade tree. One or more California Linnets were flying excitedly back and forth within the foliage of the tree and calling loudly and some English Sparrows also present were chirping in remonstrant tones. The object of their attention was a California Jay (*Aphelocoma californica*) which at my close approach flew out of the tree and made off carrying a young bird as he went. The Jay alighted on a large horizontal limb of a Monterey cypress and there, literally standing on his prey, began to peck vigorously at the latter's neck. The Jay's head moved up and down with the swift strong strokes that these birds use when any food is "at hand". All this time the fledgling had emitted an almost continuous series of cries but with the progress of the Jay's attack these suddenly ceased. The Jay continued to peck at his prey and soon stray feathers and bits of flesh began to come down from the tree. Wishing to learn the victim's identity, which was not evident from the strident notes it had uttered, I threw stones at the Jay until the bird was frightened enough to drop its prey and hop up into the tree. The dead bird was a young English Sparrow (*Passer domesticus*) presumably not yet out of the nest, as the flight feathers were not fully grown. It had been killed by the Jay pecking at its neck until the vertebrae were fractured and the spinal cord laid open and injured. The young bird is preserved as alcoholic specimen number 30833 at the California Museum of Vertebrate Zoology, exactly as it was found when released by the Jay.—Tracy I. Storer, *Museum of Vertebrate Zoology, Berkeley, California, July 31, 1919.*

EDITORIAL NOTES AND NEWS

We are glad to be able to present at this time the portrait of Major E. A. Goldman, recently returned to Washington from overseas service in the United States Army. Word now comes that he has been placed in charge of the Division of Biological Investigation, Bureau of Biological Survey, United States Department of Agriculture, a post which he is eminently qualified to fill. Goldman is favorably known in the west particularly for the field work he has done in many of the states as well as in Lower California and Mexico. His important scientific contributions have been chiefly in the field of mammalogy.

Members of the Cooper Ornithological Club will find interest in looking over a recent paper bearing the title: "Notes on Mammals Collected Principally in Washington and California between the Years 1853 and 1874 by Dr. James Graham Cooper" (Proc. Calif. Acad. Sci., 4th ser., ix, 1919, pp. 69-121). The author, our fellow member Dr. Walter P. Taylor, has gathered into the pages of this contribution a large amount of biographical matter relating to the all-round and gifted naturalist for whom our organization was named.

Ornithology has seldom had to bear with so serious a loss as that suffered in the

death of William Brewster, which occurred on July 11. Here was a man who was himself a student of scholarly attainments; he made many contributions to the permanent literature of ornithology. And also, being a man of some means, he was able to, and did, during his lifetime, advance in a material way the interests of other workers and institutions in this field. Now, by his will, as we learn from the *Boston Transcript*, he leaves to the Museum of Comparative Zoology, Harvard University, all of his large and exceedingly valuable collection of birds, to the same institution an endowment fund of $60,000, to the American Ornithologists' Union $2000, and to the Nuttall Ornithological Club $2000. There are many other bequests, but the above serve to show Brewster's deep devotion to the scientific study of birds.

With regard to Judge Ed Wall's article which appears elsewhere in this issue we fear the writer, in common with not a few other bird students, has an erroneous idea as to what constitutes a "record" in the annals of natural history. In our belief, not until *publication*, when made available to any diligent seeker for knowledge anywhere in the world, does any fact or set of facts reach the dignity of a true *record*. The facts Judge Wall now makes known, and which establish the nesting of the Wilson Snipe in southern California, are immensely important. But no one could possibly be held to account for ignorance of facts stored only in the memory or notebooks of one or a few persons.

Fig. 45. Major Edward A. Goldman, now in charge, Division of Biological Investigations, United States Bureau of Biological Survey.

MINUTES OF COOPER CLUB MEETINGS

SOUTHERN DIVISION

APRIL.—Regular monthly meeting of the Cooper Ornithological Club, Southern Division, was held at the Museum of History, Science and Art, at 8:00 P. M., April 24, 1919. In the absence of President and Vice-President, Mr. Chambers was acclaimed chairman. Other members present were Messrs. Brown, Brouse, Bishop, Daggett, Hanaford, Howell, Reis, Rich, Taylor and Wyman, and Miss Palmer.

Minutes of the March meeting were read and approved, followed by reading of minutes of the Northern Division for March. On motion by Dr. Rich the Secretary was instructed to cast an electing ballot for the persons whose names were presented at the previous meeting. New names presented were: Waldo L. Rich, Saratoga Springs, N. Y., by Dr. G. C. Rich; Miss L. M. Peck, 1510 Girard Ave., Los Angeles, by A. B. Dickinson; Richard Baxter Atwell, 676 So. Bronson Ave., Los Angeles, and D. de Rebcowsky, 811 Story Building, Los Angeles, by W. Lee Chambers. The name of Richard Cox, 3rd, was received from the Northern Division.

There being no further business matters for consideration, the members spent an hour in general discussion and inspection of several trays of warbler skins. Adjourned. —L. E. WYMAN, *Secretary.*

MAY.—Regular monthly meeting of the Southern Division, Cooper Ornithological Club, was held at the Museum of History, Science and Art, at 8:30 P. M., May 29, 1919. Members present were: Messrs. Appleton, Chambers, Hanaford, Howell, Miller, Reis, Rich, Robertson, and Wyman.

Minutes of the April meeting were read and approved. On motion by Mr. Robertson the Secretary was instructed to cast an electing ballot for the persons whose names were proposed at that meeting. New names presented were: Walter Clark, 424 So. Broadway, Santa Ana, by Wright M. Pierce; Esther McDuff, Coachella Union High School, Indio, by C. O. Esterly. Four names were received from the Northern Division: T. C. Frye, Mrs. Flora C. Hayes, Miss Mary E. McLellan, and F. N. Bassett.

The following resolution was adopted: RESOLVED, that in the death of D. I. Shepardson, the Cooper Ornithological Club has lost a valued member, and ornithology, to which he showed an unwavering devotion, has lost a valued friend, and that the Southern Division of the Cooper Ornithological Club extends its sincere sympathy to his family in their bereavement.

There being no other business matters for consideration, an hour of informal discussion followed, during which various members related recent collecting experiences, while Mr. Robertson told of some highly interesting and amusing incidents connected with trips made to various islands of the Santa Barbara group, some twenty years ago and later. Adjourned.—L. E. WYMAN, *Secretary.*

NORTHERN DIVISION

JULY.—The regular monthly meeting of Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, Berkeley, on Thursday evening, July 17, 1919, at 8 P. M. President Evermann was in the chair, with the following in attendance: Members: Mesdames Grinnell, Noack, and Schlesinger; Miss Pringle; Messrs. Carriger, Grinnell, Labarthe, Lastreto, Joseph Mailliard, Noack, Ray, Storer, and R. S. Wheeler. Visitors: Mesdames H. E. Thompson, Mary A. Van Dyke, and Florence G. Wheeler; Misses Elizabeth Hendren, Elizabeth Livingston, Mabel Cassell, Mary Gallochar, F. E. Carlton, Myrtle West, Roxana Osgood, Maud Swarth, Roxana Stevens, Miriam M. Wood, Carmen A. Blessing, Bessie M. Lander, Marion Clark, Josephine Geiselhart, Beatrice Howitt and Eleanor Howard; Messrs. L. B. Browning, Ellis S. Jacobs and Arthur Farquhar.

The minutes of the June meeting were read and approved. Proposals for membership were made as follows: Miss Josephine Geiselhart, Concord, Calif., by Margaret M. Wythe; Mr. Arthur G. Brown, 359 Monadnock Bldg., San Francisco, Calif., by Milton S. Ray.

Dr. Evermann reported that the Pacific Fisheries Society had adopted strong resolutions relative to the need of oil companies controlling the dumping of crude oil on the ocean adjacent to the California coast and that progress was being made in the campaign to eliminate this evil.

Mr. Joseph Mailliard recounted his experiences in collecting in portions of Lake and Mendocino counties during the past season and Mr. Jules Labarthe told of his season's work.

Tracy I. Storer presented as the paper of the evening an account of "Some birds of the Yosemite and High Sierra Nevada". Discussion and examination of material recently collected in the Yosemite region followed the presentation of the paper. Adjourned.—TRACY I. STORER, *Secretary, protem.*

For Sale, Exchange and Want Column.—**Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. Lee Chambers, *Eagle Rock, Los Angeles County, California.***

The Natural History Museum, *Balboa Park, San Diego, Calif.*, offers for sale copies of "An Annotated List of the Birds of San Diego County, California," by Frank Stephens; price 25c. Stamps taken.

Wanted—To exchange for or purchase good scientific bird skins to complete variations and genera in my collection. Please send lists with general wants or terms.—C. L. Phillips, *5 West Weir St., Taunton, Mass.*

For Sale—Sixteen complete years of "The Auk", 1902 to 1918, inclusive, as well as a few separate numbers of earlier date. All copies unbound and in first class condition. Make offer to Wallace Adams, *6019 Colby Street, Oakland, Calif.*

For Sale—16 odd vols. of Bird-Lore, $1.50 per vol.; 100 single, 30c per copy and up. Forbush's Shore Birds, bound, $2.00. Knight's Birds of Maine, $2.00. Trumbull's Portraits of Birds, $1.75. Sage's Birds of Conn., $1.50.—C. M. Case, *306 Blue Hills Ave., Hartford, Conn.*

Wanted—Fleas from birds' nests. For particulars apply to Hon. N. Charles Rothschild, *Arundel House, Kensington Palace Gardens, W. 8, London, England.*

For Sale—Ridgway's "Birds of North and Middle America", parts 1 to 7, as issued, paper, $24.00 (or bound, 4 vols. in half leather, $35.00); The Condor, vols. 3 to 20, complete as issued, paper, the set, $35.00; Pac. Coast Avifauna, nos. 1 to 8, and no. 11, paper, the set, $10.00; Proceedings Zoological Society of London, 1830-1849, complete, 19 vols. ("parts"), cloth, the set, $30.00.—Tracy I. Storer, *Museum of Vertebrate Zoology, Berkeley, Calif.*

I Want a complete set or odd volumes of the Proceedings of the Biological Society of Washington. Will give good exchange or cash.—W. Lee Chambers, *Eagle Rock, Los Angeles County, California.*

MEETINGS OF THE COOPER ORNITHOLOGICAL CLUB

Northern Division: 8 P. M., third Thursday of month, at Museum of Vertebrate Zoology, University of California, Berkeley. Take any train or car to University Campus. The Museum is the corrugated iron building on south side of campus just north of football bleachers.—Mrs. Amelia S. Allen, *Sec'y., 37 Mosswood Road, Berkeley, Calif.*

Southern Division: 8 P. M., last Thursday of month, at Museum of History, Science, and Art, Exposition Park, Los Angeles. Take "University" car south on Spring St., or "Vermont and Georgia" south on Hill. Get off at Vermont and Thirty-ninth, and walk two blocks east to Exposition Park. The Museum is the building with the large dome.—L. E. Wyman, *Sec'y., care of Museum.*

Intermountain Chapter: Get date and place from the Sec'y., Ashby D. Boyle, *351 5th Ave., Salt Lake City, Utah.*

San Bernardino Chapter: Get date and place from the Sec'y., M. French Gilman, *Banning, Calif.*

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THE CONDOR

A Magazine of Western Ornithology

Volume XXI November-December, 1919 Number 6

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Issued November 29, 1919

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[Issued November 29, 1919]

AUTOBIOGRAPHICAL NOTES

By HENRY WETHERBEE HENSHAW

(*Continued from page 181*)

EQUIPMENT OF THE NATURALIST

MY equipment as naturalist was simple enough. A pair of roomy saddle-bags enabled me to carry a few bottles for the reception of small specimens, especially insects, and a supply of cartridges, cotton, matches, and other trifles of like nature. I also carried an insect net attached somewhere about my person, while a good doubled-barreled shot-gun, slung on the horn of the saddle, completed my everyday outfit. Thus equipped and clad in rough but serviceable clothing, I have reason to believe that my personal appearance was more striking than ornamental. More than once, when I chanced to meet a solitary horseman on the lonesome trail I saw him slip a hand furtively behind to make sure that his gun was ready. Unquestionably my appearance was quite out of the ordinary, even in a wild country, where the old saw "clothes make the man" is lightly regarded, or not regarded at all, and was, perhaps, equally suggestive to the chance traveller of an escaped lunatic or a highwayman. The insect net particularly excited curiosity, but when I explained I was a "bug hunter from the Smithsonian" I was at once accepted as harmless.

Two stout boxes, one for supplies as powder, shot, arsenic, cotton, and the like, and the other fitted with trays in which to dry and carry bird and mammal skins, a copper tank of alcohol, enclosed for prudential reasons in a stout locked box, and a plant press, were also part of the naturalist's impedimenta. My skinning table was improvised by placing one collecting box on top of the other, and a folding stool enabled me to sit down and to skin birds with reasonable comfort, although several hours work usually developed a number of different sorts of backache.

As we seldom slept two nights in the same place, and as the bird and mammal skins had to be dried while being transported on mule back, I used to place them in paper cones, which I tacked securely to the bottom of the trays. Provided all went well, the skins dried in very good shape, but the stampede of the pack animals, no very rare event, was likely to deposit the skins in a heap in one corner of the tray, a catastrophe which necessitated much labor in reshaping them.

MODERN COLLECTING GUNS

The collector of today little realizes the boon he has inherited in the small bore guns which are such convenient and efficient collecting tools. When I began work on the Wheeler Survey all my collecting was done with a twelve

Fig. 46. Henry Wetherbee Henshaw as a member of the Wheeler Expedition in 1877; note equipment of the field collector of that period.

gauge breech loader, a fearsome weapon to use on hummers and other small species. Brewster and I often discussed the possibility of a better collecting tool, and finally he had a Boston gunsmith make an auxiliary barrel for a twelve gauge gun, carrying a twenty-two cartridge. Meantime I had found in a Washington gun store a Remington cane gun. I had the rifling removed, and then began experimenting with the twenty-two extra long cartridges—if I mistake not just then brought out—and with various kinds of powders and

wads to determine the most effective load and the one making the least noise. Both the twenty-two auxiliary, and later the thirty-two and the cane gun, proved great successes, and in time practically all the collectors known to me were supplied with one or both, most of which were made in Washington.

DIFFICULTIES ATTENDING FIELD NATURAL HISTORY WORK

As has been stated, the main purpose of the Wheeler Survey was the mapping of the country traversed, while geology and natural history were but secondary objects. Thus most of the time our collecting had to be done while on the march, and the specimens cared for at night. Not rarely, in order to be sure and save rare birds I dismounted and used the saddle on my mule as a dissecting table, and I can assure my readers that the process is an interesting one and likely to tax all his skill and patience, especially when flies are numerous and the mule restive.

The route followed by our parties often carried us through territory unfruitful for the naturalist, although inviting collecting grounds might be visible in the adjacent mountains, which the exigencies of the topographical work forbade us to enter. While the chiefs of the parties furnished the scientific staff all the opportunities for their investigations possible consistent with the successful prosecution of the topographical work, even so, the results of our work were comparatively small, considering the time spent in the field. Much of the time Indians had to be reckoned with, even when not openly hostile, and the scientific assistants were directed always to carry the revolver or carbine formally issued to them. These proved a nuisance, and I am happy to say were never actually needed. Indeed they proved worse than useless, since revolvers in unaccustomed hands resulted in the death of one member of the Survey and the disabling of another.

LENGTH OF FIELD SEASON AND OFFICE WORK

The length of our field seasons varied much, depending largely on the time of the passage of the appropriation bills, say from June till November, or even December. Field work completed, there followed the office work in Washington where reports of progress and final reports were completed. Much to my regret my own reports on the birds were limited strictly to the results obtained by myself and the other members of the Expedition, which of course materially limited their scope.

MAMMALS OF THE UNITED STATES

Recalling my several years experience as a collecting naturalist in the far west, it seems strange how small was the number of mammals collected compared with that of birds. While it was true that I was much more interested in birds than in mammals, I was fully alive to the importance of securing all the mammals possible, and never allowed an opportunity to collect them, especially the smaller species, to pass unimproved.

The fact is that the earlier naturalists knew practically nothing about trapping, even if the speed with which they usually traversed the country had not precluded the systematic use of traps. Mammals of the size of rabbits and squirrels were easily obtained, and I collected many, as did my predecessors. But the presence of the smaller rodents, especially mice and other nocturnal species, was only dimly suspected, and these were obtained for the most part only when chance threw them in the way of the collector. Moreover, even as

late as the early eighties most of us had come to believe that practically all the mammals of the country had been collected and described, and it was not until the days of the Biological Survey that a hint of the real richness of the mammal life of the country was made known. By 1885 Merriam had revolutionized the making of mammal skins, following in a general way the model of the perfected bird skin. Instead of flat and shapeless things, mammals skins became for the first time, if not things of beauty, at least shapely and durable specimens, which admirably served the purposes of scientific study.

Having employed Vernon Bailey in Minnesota about 1883 to trap small mammals, Merriam soon learned what could be accomplished by the use of traps in skilled hands. The Survey was established in 1885, but it was not until several years later that the survey naturalists began a systematic and exhaustive search for mammals, which they were able to do owing to the invention of the several types of small traps. These proved a practical and efficient means of securing small mammals in any numbers desired for systematic study. The result was series of small mammals hitherto undreamed of, and scores of new forms were obtained in the very territory which the earlier naturalists had found comparatively barren.

Thus in 1885 there were known from the territory north of Mexico approximately only 363 species of mammals, large and small. In 1900, 1450 had been described and recorded; while in 1912 the number recorded by Miller in his check list had reached a total of 2138! At the present time the number of described forms is probably not far from 2500. These figures are only approximately correct, since authorities differ rather widely as to the status of many of the forms, and as to the concept of species and varieties. Nevertheless the greater number of the forms described were new to science in every sense of the word, and their discovery was chiefly due to improved methods of search, especially to improved traps and to skilful and systematic trapping.

THE OLD SOUTH TOWER

In the seventies, Robert Ridgway and Doctor Coues used to do much of their writing in a room near the top of the old south tower of the Smithsonian building, and many were the pleasant hours I spent there in their company and that of visiting ornithologists, as Wheaton, Sennett, Brewster, Merriam and others, who occasionally made pilgrimages to Washington with specimens for examination and field experiences to narrate.

Doctor Coues' readiness to break off work for a chat was always signified by pulling forth the human skull in which he stored his tobacco and rolling a cigarette, when he was ready for reminiscences or discussion. It may interest my readers to know that Dr. Coues' real "working day" at home began about nine or ten o'clock at night and continued till early morning, say two or three o'clock. Then he slept for several hours, followed by breakfast whenever he felt inclined to arise. Hence he usually reached the Smithsonian about noon, when he opened his mail, and began his afternoon's labor of writing, or examining specimens, as the mood prompted him.

He had a small collection of birds in the tower, about 300 in number, which I remember as a somewhat miscellaneous assortment, many of which, no doubt, had been given him by friends. These he presented to the Museum in 1881, and the same year Mr. Ridgway turned in his fine collection of North American and tropical birds, amounting to some 2300 skins. Later, a rule of the Museum was

promulgated prohibiting any Curator from maintaining a private collection of his own. The rule, which seems to me to be a wise one, was evidently intended to prevent a division of interest, and to focus all the time and attention of the Curators upon the Museum collections.

THE WEST BASEMENT

Another scientific sanctuary in the old Smithsonian building, redolent of many odors and fond memories, was the west basement, in a room of which was stored the extensive collection of reptiles and batrachians, the accumulation of years by the western survey expeditions and of donations from private individuals. Here Dr. Yarrow and I spent much time preparing reports on the collections of the Wheeler Survey. Here also Dr. Yarrow made some interesting experiments with live snakes. Not rarely Prof. Baird looked in upon us as he passed along on one of his frequent inspection trips through the building. Here also occasionally came Prof. E. D. Cope, whose astonishing memory for natural history details was always a source of wonder to me. Here also I used to see Prof. David Jordan at work on fishes when he made one of his rare visits to Washington.

ACQUAINTANCE WITH DR. D. WEBSTER PRENTISS

Mention of Dr. Coues' name naturally recalls that of his associate in the publication of the earliest list of the birds of the District of Columbia, Dr. D. W. Prentiss. Coues and Prentiss were college mates at the Columbian University between the years 1858-1862. Their first list of the birds of the District was published in 1862 in the annual report of the Smithsonian Institution for 1861, and was the result of much boyish enthusiasm in the study of birds, together with no small amount of hard work. Needless to say that for the time it was an excellent piece of work. Nearly twenty-five years later was published in 1883 their "Avifauna Columbiana" which brought the subject up to date, and in many ways marked a great advance over its predecessor.

Soon after, both men entered the army as surgeons in the Civil War. After the war the demands of a growing practice in Washington caused Dr. Prentiss to relinquish all active work in ornithology, but he never entirely forgot his old love, and in the early eighties he and I made a number of trips after warblers to my favorite collecting grounds along the banks of the picturesque Rock Creek, the site of the present National Zoological Park. On these occasions we were up betimes in the morning, and after a hasty bite were off so as to be on the ground between four and five o'clock, a time of day dear to all bird collectors. I recall with pleasure the Doctor's enthusiasm over the first Blackburnian Warbler he collected and the first he had ever seen.

The Doctor was something of a sportsman in his younger days, and among other reminiscences, told me that, as boys, he and Dr. Coues had killed English snipe in a "little springy place" on Dupont Circle, in the heart of what is now, or recently was, the fashionable residence part of Washington. He and I made one memorable trip to the Patuxent River after soras when an extraordinarily high tide flooded the marshes, and gave such shooting as comes to a man, if at all, but once in his life.

ACQUAINTANCE WITH GEO. N. LAWRENCE

During my annual trips from Washington to Boston I never failed to call on the veteran ornithologist, Geo. N. Lawrence, in New York. As I made my

way from the train directly to his house, and, as I arrived early in the morning, usually Sunday, I generally found him, where he naturally would be expected to be, in bed. However, he always arose with alacrity, and before a bright fire in his study was ready for a talk on my last season's work, and for the exhibition of any notable specimens he had received from the Tropics since my last visit. He was a very genial and courteous gentleman of the old school, and retained his interest in ornithology to the last.

DUPLICATES OF WESTERN BIRDS ASSIGNED TO ME

My interest in collecting large series of western birds was greatly increased by the privilege accorded me by Lieut. Wheeler, and assented to by Prof. Baird, of selecting from the duplicates of each year a series for my own collection. In those days western birds were rare indeed, and my collection soon became very valuable as a study series. With the permission of Prof. Baird I finally brought it to Washington and stored it in the Smithsonian, within easy access of Mr. Ridgway and myself, and I was enabled in my spare time to rearrange, label and prepare a card catalogue of it. This card catalogue is still extant and has proved valuable to others besides myself for reference purposes.

(To be continued)

BIRD NOTES FROM SASKATCHEWAN

By H. H. MITCHELL

WITH THREE PHOTOS

PROBABLY Saskatchewan, of all the Canadian Provinces, is the least known from an ornithological point of view. With an area equal to the states of North Dakota, South Dakota and Nebraska, it consequently offers a large field of possibilities. In the south-west, bordering on the state of Montana, is an arid, or semi-arid district, the more or less rolling prairie of which is broken by the low, partly wooded Cypress Hills, with considerable sage-brush on the southern slopes. Farther north and eastward is the more level wheat-producing bare prairie. Partly wooded areas then extend northward to the Saskatchewan River, north branch, beyond which is the comparatively little known forest country, with its larger lakes, reaching Lake Athabaska and Reindeer Lake near the northern boundary of the province.

Spizella breweri. Brewer Sparrow. It was in the district first mentioned above, in the valley of the Frenchman River, that I found this species, June 16, 1919, evidently breeding in numbers in the sage-brush patches on the river-flats and open southern slopes of the Cypress Hills. I believe the birds were fairly common between Eastend and Ravenscrag, possibly extending to points farther west. Time permitted me only to work a few miles west of Eastend, mostly on the ranch of Mr. Lawrence Potter, who, by the way, is one of our few reliable bird observers. Along the valley on his ranch alone we estimated

there were eight or ten pairs of birds, based on males we saw and heard. The females were evidently sitting and were not observed, nor did we find a nest. Males taken were breeding birds, and Mr. Fleming, of Toronto, to whom I sent a couple of skins for positive identification, agrees with my opinion that this is the first record of the species east of the Rockies, certainly the first for Saskatchewan.

Zonotrichia leucophrys leucophrys. White-crowned Sparrow. Several pairs of this species were noted in the above district, and thanks to Mr. Potter's vigilance, a nest with five eggs, incubation advanced, was found on his ranch June 18, 1919. Mr. A. C. Bent and Mr. Spreadborough, I believe, mention it as common in 1907 and 1908 in the Cypress Hills and apparently breeding.

Fig. 47. The south Cypress Hills, near Eastend, Saskatchewan; nest of Ferruginous Rough-legged Hawk in foreground.

though I do not know if the actual finding of nests and eggs has before been recorded from the region. It is interesting to note that we have a skin of *Z. l. gambeli* in the Provincial Museum taken at Reindeer Lake, July 16, 1914.

Spizella socialis socialis. Chipping Sparrow. As far as my observations go, this bird is not common in any part of the province. A breeding male was taken in the Cypress Hills, June 15, 1919.

Otocoris alpestris leucolaema. Desert Horned Lark. From specimens taken in the Cypress Hills, this would appear to be the only form found in that region.

Fig. 48. Nesting site of White-crowned Sparrow (marked by handkerchief); Cypress Hills, Saskatchewan, June 18, 1919.

Fig. 49. Nest of White-crowned Sparrow in wild gooseberry bush; Cypress Hills, Saskatchewan, June 18, 1919.

Antrostomus vociferus vociferus. Whip-poor-will. In looking up records of the Whip-poor-will in western Canada, I could find none for Saskatchewan. I was therefore glad to have the opportunity to investigate some reports I had heard of its occurrence along the Saskatchewan River east of Prince Albert. On July 15 of this year I reached the district near where the South joins the North Saskatchewan River, about thirty miles east of Prince Albert. My guide and I arrived at our camp-site late in the evening; while putting up the tent, I was delighted to hear the bird I was after, "singing" in the poplar woods quite near us. The following nights I heard it much farther away, if it was the same bird, though my guide told me that some years one could hear three or four birds "singing" in the neighborhood. Evidently it had moved to another "bush" about a mile from camp. I located it there on the 20th, after tramping the ground to and fro till late in the afternoon. It flushed a couple of yards from my feet. This proved to be a male; careful search in the neighborhood failed to discover the female, and as I did not hear another songster the succeeding nights I was there, apparently there was but the one pair in the district.

Regina, Saskatchewan, August 18, 1919.

A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

(*Continued from page 193*)

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ON the south shore of the lake where the Holbœll family was generally found, families of Pied-bill and Horned Grebes were also seen, the east and south shores being the favorite feeding grounds of the Grebes of the lake. One family of peeping young Pied-bills was seen near shore where an oily green scum had formed on the water, so thick that a yellow and black snake squirmed its way along on top of it, its coils actually gathering and piling up the greasy looking substance. In walking softly along the wooded bank above, I heard the Pied-bills talking and found them about a thin screen of tule. The mother gave a queer note of warning, whereupon the six young—easily recognized by their black and white striped necks—swam out a little and watched me. Farther along some larger young, caring for themselves, swam along shore examining me, two of them, wet from diving, in profile showing wisps of sharp-pointed tails. One stretched its neck high to see me better, and as it turned its head from side to side was reflected in the still water near shore.

Near the spot where the old Holbœll drove off the light-cheeked Horned Grebe that used to swim by itself, on August 16, on looking through the trees I discovered a Horned Grebe swimming and diving with two almost grown white-throated young. Was this the mate of the light-cheeked one, come from her nest with her brood at last? They noticed my least motion and kept out a little though evidently wanting to come in shore. The next day, in the same

place I found a pretty group—three striped-necked young Pied-bills sitting on the water close together. In a few moments they were joined by three other young Grebes, presumably those seen on the previous day as birds are very local in their habits; and the six sat there watching my shore while I was watching them. Were the mothers of both broods giving lessons in self-reliance? As we all sat quietly taking note of each other, the willowy cry of a Flicker came from the woods behind me, the song of a Sora rang out brightly from a marsh in the distance, and the keen *Pet-er-weet, weet, weet* of one of a family of Spotted Sandpipers that patrolled the shore called attention to a teetering figure below. Then a young Franklin Gull swam by, mirrored in the water, picking lightly from the surface as it went.

Up the shore beyond the Grebes and Sandpipers an old fence line extended out into the water like that in the farmhouse corner of the lake, also affording convenient roosting places for Night Herons. So much at home did they feel here that one of them held his post even when a line of cattle waded splashing out along the shore behind him. Three of the tall, yellow-legged birds were standing on the fence posts one afternoon when I arrived, while in the cove beyond, a fourth stood with his back to a tule wall. One of the row of three, probably catching sight of a minnow, suddenly dropped to the surface of the water, after which he returned to his fishing post. The hungriest looking of the three stood with body bent to the horizontal, staring down anxiously upon the water, and as its pangs increased, leaned still farther, ready to pitch forward. The one on the post behind, however, stood calmly back, with head up in judicial pose—probably he had had more breakfast! The Hungry One, finding poor fishing at his post, left, whereupon the Well Fed One yawned, and rising deliberately with yellow legs hanging, flapped slowly across to the deserted post. What did he care if the fishing were poor there?

Across the cove another fisherman with form only vaguely suggested inside a bank of tules moved mysteriously down the line. Herons certainly pin their faith to blinds! He was far enough back inside his to make it effective, but in cases where the screen is too thin, the large size of the birds makes them conspicuous. Still, we must not forget the principle enunciated by Abbott Thayer, for light underparts seen from below when near the water doubtless tone out against the light sky to offset the conspicuous size.

A third short section of fence running out into the water on the south shore was occasionally used by perching Night Herons, but it was also used by the family of Spotted Sandpipers. Once they swung in and lit on the barbed wire and when rested started to walk the tight rope, wings up to steady themselves. Some green lake weed, hanging from the wire, cushioned a section for them, but when they reached the bare sharp barbs, I noticed that they lifted their feet quickly and nervously.

Besides Herons, Grebes, and Sandpipers, families of Ducks were occasionally seen along the south shore. One of the families of Pintails seen about the lake—a brood of eleven whose small-billed mother had brought them across from the western side to be sheltered from a strong east wind by the eastern wall and its tule border—on several consecutive days were found along the wooded south shore where the brood was feeding busily, picking dainty morsels from the surface of the water. Sometimes they swam behind the mother, all eleven woozy ducklings in single file, and once they divided and partly en-

circled her, making a lovely intimate family picture. At some bit of carelessness on my part on the bank above, however, the mother gave a warning note and the brood swam farther out from shore.

On the morning of August 10, when a cold northwest wind had driven all but a few Coots and Ruddies from the south side of the lake, and the water was rough, and foam lay piled along the shore, to my surprise I discovered the pretty Pintail and her downy brood. Not far out, to be sure, but riding the small rollers with such evident satisfaction one imagined them quite capable of ocean voyages! As they rocked over the waves they preened themselves nonchalantly, if the spray broke over them, shaking their little heads casually. Their mother, a good sailor too, preened as she rode, her head back over her shoulders, letting the waves roll her as they would. The downy ducklings dived prettily and on coming up gave a little jump and a shake of the head. But—what had become of the eleventh? There were only ten, now. Had the family slept too near to shore? There was a strong mephitic odor along the bank.

In this same place, when revisiting the lake with our little school boy on September 2, the child, pointing to a group on the water asked eagerly, "What are those?" adding, "They're babies of some kind," and so they were, four tiny dark ducklings, feeding on surface water weeds. A Pied-billed Grebe, two female Blue-winged Teal, and a female Ruddy were swimming near them, but no one claimed the little tots and I was at a loss to know whether they belonged to the Teal or the Ruddy. Finally, however, after letting the Teal and the Pied-bill swim around close to the little ones for some time, the Ruddy came swimming over all bristled up and chased off a Pied-bill with such an air of exclusive ownership that Solomon himself would have felt quite satisfied. The little school boy watched the proceeding with great interest. When he saw the wondrous blue bill of the Ruddy drake that he had been anxiously looking for, he exclaimed, "Oh, isn't that pretty—that *blue* bill—Say, but that is pretty!" and when we started home he ejaculated fervently, "I'm glad I *came*"—a remark deeply appreciated, as agriculture in the fascinating form of a threshing outfit to watch had threatened to outrival ornithology.

As we walked back through the woods, a northern visitor, a Red-bellied Nuthatch, crossed our path with its autumnal message. That was not the first pleasant surprise I had had in these woods. Two weeks before—on August 17—a family of three-quarter grown Long-eared Owls had burst out of a tree before my very eyes, one of them lighting not far away, sitting up parallel to the tree trunk which it closely resembled. Its ears were still short and as it lowered its head, its eyes inside its facial disk had a strained anxious look. Retreating to another perch, it turned its head around over its back to look at me. Although the middle of the day, its ears were alertly sensitive, for at the sound of Crows or a flock of Ducks passing over, it looked up.

From its perch in the sun it again flew to a branch in the shade, and leaned over twisting its head around trying to see me better. But soon its eyes stared wide as if it had to try hard to keep awake, and presently its lids drooped. When I walked up closer, however, it drew itself up very tall and thin, with ears erect like the pictures of protective attitudes, one wing curiously drawn half way across its breast helping to narrow its body and make it look more like the tree trunk. When nothing happened, it relaxed, let itself down shorter, and let go the branch with one furry foot, standing on the other foot ready for a nap.

What was that noise below? It turned its head to look over its shoulder, and with face forward, pressed on hard with its eyes. Seeing nothing there it looked back over the other shoulder in the same intense, strained manner. Still discovering nothing it gave a little yawn. But when some Waxwings whistled softly near by and a Mallard quacked in passing, it quickly looked up. Then perhaps missing its family, it gave the weak cry of a young bird, which like that of the Ferruginous Rough-legs, was absurdly out of keeping with its size but went well with the shortness of its ears. When I answered in my best Owlese, it cocked its head drolly on one side. That would bear looking into. Again worming its big head down and around, its facial disk setting its face quite apart from its neck, it studied me intently, and not liking what it saw, with a queer little *qua, qua, qua* flew off. Several times more it lit and flew, and I followed. When it crossed a Kingbird's beat, that self-appointed guardian of the peace flew down at it—*once*. Why he stopped at that, I was at a loss to imagine, unless so young to his trade that the sight of the big-eyed, big head raised upon him at close quarters was a deterrent. His kingly courage returned when the Owl moved, however, and he flew down and snapped his bill over it. When the young Long-ear lit next, it looked so comfortable on its shady branch that I did not want to disturb it, so, after listening to the call of a Catbird, the song of a Yellow Warbler, and—out of season though it was—the full love song of an Oriole—I went back down the lake toward home.

The next day I had a still greater surprise. Contrary to my usual custom of keeping carefully secreted in the woods above the water, I had gone down on the short strip of beach where the Spotted Sandpipers usually ran up and down, and happening to glance up in the sky saw a compact flock of large white forms advancing. Gulls? No! On they came, with the slow, heavy, stately flight of White Pelicans. As this was before I had seen them at North Sweetwater and I had looked for them in vain since the first small squad seen on Devil's Lake in June, I greeted them with eager anticipations. Fourteen there were, of the great white airships. They were heading southeast against the wind as if coming straight for the one narrow strip of beach that side of the lake afforded. And there I stood on it! Alas! Around they turned, flying back high across the opposite side of the lake. As I gazed up at them their formation characteristically changed from a wedge to a straight line, and then to a confused mass without figure. Overcome with disappointment, in the vain hope that they might come again, I retreated to the woods. Had I kept out of sight before, probably the whole fleet would have lighted on the beach under my very eyes. Realizing at last that there was no hope of their return I went back to the beach to see if they were still in sight. Looking across the west end of the lake, where a threshing machine was building up a straw stack in a harvest field, high in the sky I caught sight of a wavering silver thread, and through the glass the silvery thread turned into a line of white birds, the line forming and reforming till they disappeared in the sky.

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From the south-east corner of the woods in which stood the hunting lodge, late one August afternoon, after a thunderstorm, there was a charming picture of the peaceful quiet life of the waterfowl undisturbed by man. As I crept in down an old willow-bordered path to the lake and carefully placed my camp-stool between screening willow branches, the birds went about their affairs

only a few yards from me, all unaware of my presence. A young Catbird flew into the bushes at the lake end of my path, while a Flicker and a Goldfinch came in almost over my head, as undisturbed as the Meadowlark singing outside.

A flock of about forty Ruddies had gathered in the quiet corner out of the wind. In the strong western light that slanted full across the safe harbor, their white cheek patches were dazzlingly snow white, their bodies a warm rufous. A pretty sight they made, riding mirrored on the smooth water, a blue bill and white cheek patch in duplicate making indeed a striking picture. A big mother Canvasback swam in through an open space between the Ruddies—a steamship plowing its way among motor boats—leaving a long, strongly marked wake behind her and diving at its point. In feeding, one of her family stood on his head, tail in air; another, after bathing, rose so straight he almost tipped over backwards.

Three young Coots climbed up eagerly into a yard of tule that rose out of the water in the center of the protected harbor, its slender stems charmingly reflected below. Coots' Rest I had come to call it, from seeing a matronly old Coot standing there preening herself, looking round and comfortable as if she were on her own home island. Now, however, two of the young ones got to scrapping and rose bill to bill, one finally driving the other into the water. His undisputed possession of the little island did not last long, however, for the queenly old Canvasback who had come in among the Ruddies swam up to the pleasant resting place quite as if all the lake were hers by right, and the aggressive young Coot hurriedly slipped off into the water.

At one time the yard of tules constituting Coot's Rest was taken possession of by a mother Shoveller who in moving around showed her orange under mandible and feet, and was apparently taking solid comfort on the little island—for even Ducks seem to like to tread on terra firma occasionally, perhaps to get their sea legs off! When she went out to feed, she let the mud strain out of her bill in good spoonbill fashion. Another time four Ducks were enjoying the wisp of tule, one barely visible inside the thickest part of the screen, while swimming around close by, Blue-winged Teal tipped up their wings so the wide blue patch and its bordering white and green showed, and others of their confreres flew in calling softly. When a Ruddy autocratically rushed along by Coots' Rest, routing out one of the Ducks which was taking its ease, a big flock of Ducks passed close over the water, and Ruddy, canting his head over to look up, apparently forgot the small tule island and swam on.

The evening that the waterfowl gathered in the protected harbor to get out of the wind, across the lake, above the harvest fields dotted with sheaves of wheat, a creamy cumulus cloud arose, to be reflected in the lake. Scattered over the harbor, Coots were getting their evening meal in various ways—picking lightly from the surface, plunging their heads under water, or diving with a splash that sent the water sparkling into the air.

On the outer edge of the circle of Ruddies, Coots, and Canvasbacks, I was glad to discover my family of Holbœll Grebes, characteristically keeping a little apart. The sun touched up the red throat and white face patch of the old mother who was followed close by her little one swimming with bill open, talking as usual in a soft young voice close by her ear. When she dived and came up with food, two of the young swam toward her for their share, but she had taught them to fend for themselves, and even the little Talker was now diving

quite freely. Before sunset the Holbœll call drew my eye to a reunited family, the mother with all three young. Between dives there once seemed to be a second adult, as if the father had joined the family again. The suggestion was so pleasant that I found myself making excuses for his absence. Perhaps to make the group less conspicuous he kept away in the day time, but before night, came to help guard the little ones during the hours of darkness.

A sudden splash! Probably the Black-crowned Night Heron on the post just beyond had caught a minnow. As I glanced around the curving tule border of the harbor, warm in the glowing light, another Heron's form was dimly outlined—a hunter in his blind. In the smooth mirror of the lake, the cumulus cloud above the harvest field was growing salmon. The sound of a binder came on the wind. Swallows twittered, flying swiftly overhead, and small squads of Ducks swung in. Two Pintails lit outside the circle of waterfowl and sitting high, with long necks raised, looked nervously on, not having learned the security of the quiet refuge; but from within the circle, the homelike quack of Mallards came from a band swimming around self-absorbed and unafraid. Flocks of Ducks, Gulls, and Crows, crossing overhead to their nightly roosts made no ripple in the life of the little harbor, in which was heard the soft *tu-weep* of the Spotted Sandpiper, well suited to the stillness of the peaceful, sunny bay.

As I carefully withdrew leaving the birds undisturbed in their safe haven for the night, I passed up the road by the lake now bordered with golden wild flowers. Looking west I could see not only the connecting Coulee, but the white line of the large Sweetwater beyond the Bridge. From the east a flock of Black Terns came speeding in. From the sunset a golden portico was reflected in the lake, its illumination spreading to a wide golden band reaching across the water. Into the east came a soft pink afterglow, and well up in the sky rode the harvest moon, while the weary harvesters, their day over at last, were wending their way slowly home.

(*To be continued*)

NOTES ON THE ELEGANT TERN AS A BIRD OF CALIFORNIA

By JOSEPH GRINNELL

(Contribution from the Museum of Vertebrate Zoology of the University of California)

THE Elegant Tern (*Sterna elegans*) is one of the several species of sea birds which nest altogether to the south of the United States and yet which appear at certain times of the year well north of our southern borders. It is listed as a bird of California upon rather meager basis, and some of the general statements made during recent years in regard to the manner of its occurrence, by the present writer among several, are likely to have left the hearer or reader with incorrect impressions. The purpose of the present article is to assemble all that has been published to date with regard to the Elegant Tern as occurring in California, to scrutinize this information closely, and to put on record an increment which has resulted from field work of the California Museum of Vertebrate Zoology.

Sterna elegans was originally described by William Gambel (Proc. Acad. Nat. Sci. Phila., 1848, p. 129), who himself "procured this species on the Pacific coast of Mexico, particularly at Mazatlan at the mouth of the Gulf of California". Some subsequent authors who credited the species to "California" or the "coast of California", may have merely inferred this, or may have carelessly transcribed the term California, alone, from Gambel's statement as just quoted. In the case of Coues (Proc. Acad. Nat. Sci. Phila., 1862, p. 540), who credits the Elegant Tern to the "Coast of California", without remark, it is of course possible that specimens taken in California were at hand. But if so, no other, or more exact, reference has been made to them in print. Not until 1868 was specific evidence given, of specimens having been actually secured within the state of California as now defined.

The first well-founded ascription of the Elegant Tern to California, then, insofar as known to me, was that by Cooper (Proc. Calif. Acad. Sci., IV, 1868, p. 10). The statement made by this author is as follows: "The first specimens I have seen from this State were shot by Mr. Lorquin in S. F. Bay, and are in fine plumage." It is to be inferred that two or more examples were encountered, but no dates or further facts are given. The whereabouts of Lorquin's birds, if they still exist, are unknown to me.

Belding apparently never himself met with this species, but he states (MS, "Water Birds", 1897): "Mr. J. C. Parker has a specimen, shot at San Diego, he informed me, in summer." The phrase "in summer" is so vague that it cannot safely be used in any seasonal study of the species.

As a result of his own observations upon the water birds of Monterey Bay in the fall of 1896, Mr. Leverett Mills Loomis makes record (Proc. Calif. Acad. Sci., 3rd ser., Zool., II, 1900, pp. 279, 287, 293, 319) of Elegant Terns as follows: September 22, a pair was noted "flying along the bay shore toward Point Pinos". October 9, offshore north of Monterey "a band of eight" was decoyed into close range, "and in another place, one of seven." October 29, three were met with, resting on a patch of drifting kelp. "No examples were noticed in November." This species "was more sparingly represented than its congener *maxima*." It is known that Mr. Loomis took a number of specimens, but these were all destroyed in the San Francisco fire of 1906.

Dr. Louis B. Bishop records (Condor, VII, September, 1905, p. 141) the capture of "an adult male" Elegant Tern at Pacific Beach, near San Diego, September 21, 1904.

In 1910, Mr. Rollo H. Beck wrote (Proc. Calif. Acad Sci., 4th ser., III, September 17, 1910, p. 64) that in his extensive collecting for the California Academy of Sciences on Monterey Bay at various times between September 8, 1903, and January 22, 1910, he had never himself met with the Elegant Tern.

On August 2, 1910, Mr. Beck began regular work with the water birds on Monterey Bay for the California Museum of Vertebrate Zoology, and continued thus until March 1, 1911. During this period he encountered the Elegant Tern once, on October 27, 1910, when one example, a male (now no. 18382, Mus. Vert. Zool.), was obtained. His field notes of that date indicate that four of the birds were seen by him late in the afternoon off China Point (Pacific Grove), going south. The one shot had a fish in its stomach. The same four birds, presumably, had been seen earlier in the day (about 2 p. m.) off Seaside.

In the fall of 1918 collecting was done at Morro, San Luis Obispo County,

by representatives from the California Museum of Vertebrate Zoology, from September 18 until November 7. Messrs. Halsted G. White, Joseph Dixon and J. Grinnell constituted the party, and one or more of these collectors worked in the immediate vicinity of Morro during the entire time. For a portion of this period the Elegant Tern proved to be a fairly common water bird on Morro Bay, or else on the outside ocean beach. The first one was positively identified on September 22, the last on October 4. Field notes follow.

September 22: One shot from company with six Royal Terns flying over the breakers of sea-beach, about two miles north of Morro (H. G. W.). On Morro Bay close to Morro, many terns seen, but not closely, of three sizes, the middle-sized one believed to be the Elegant (J. G.).

September 23: Around sandbar in Morro Bay, one Elegant Tern seen in a bunch of about twenty Royal Terns. The bill of the latter looked to be darker orange at base. Elegant appeared midway in size between Forster and Royal. No "rosy flush" could be seen in the plumage of the Elegant, even within forty yards, in strong sunlight, and with the aid of binoculars (J. D.).

September 27: One shot from company of about thirteen Royal Terns flying along sea-beach north of Morro. The bird was recognized by its smaller size, and at a distance of about twenty yards the pink coloring beneath was noticed. In flight it looked like a Royal Tern but seemed "more airy", or more graceful. It more often "cut figures in the sky", in other words it was slightly less heavy on the wing, this perhaps due merely to its smaller size (H. G. W.).

September 28: Along the sea-beach two miles north of Morro, thirty-two terns were encountered. Four of these were Forster, about twenty were Royal, and about eight were Elegant. The collector used a dead Willet as a decoy, and by throwing this into the air and letting it splash in the water, three of the Elegant Terns were brought into shot-gun range and secured. In this case it seemed that of the three species of tern, the Elegant showed the most curiosity (H. G. W.). Also one seen flying "just out of range, over the spit" opposite Morro (J. D.).

September 29: Two seen along sea-beach within two miles north of Morro (H. G. W.). Flock of about twenty-five seen on the Bay close to Morro. One shot. Pink bloom "not visible even when the birds were within easy shot-gun range" (J. D.).

October 1: Elegant Terns, in company with Arctic, kept flying about sandbar in Morro Bay during visit there (J. D.).

October 2: One Elegant secured at sandbar in Bay out of a mixed company of Royal, Elegant and Arctic, about one hundred in all (J. D.).

October 4: On sandbar in Morro Bay: terns wild; of these the Royal, Elegant and Arctic took flight in about the order named (J. D.).

As regards marks for field identification, there seems to be no outstanding positive feature by which the Elegant Tern may be distinguished at any ordinary distance from its congeners, unless conditions be such that relative size is determinable. From the notes of the field collectors just quoted, it is to be inferred that the pink blush of the lower surface can be seen clearly only under very exceptional circumstances. The relative slenderness of the bill of the Elegant *might* be used, if the proportions of this member in the Royal be vividly in mind or if birds of the two species be seen contemporaneously within short range.

Relative size is quite positively diagnostic of the Elegant, if other sea-coast frequenting species of terns be in sight at the same time. Roughly, *elegans* is a large tern, yet decidedly smaller than its usual associate, the Royal. Some exact figures will here be instructive. Weight is, of course, a much more accurate index of the volume or "bulk" of a bird, generally speaking, than is any measurement such as total length or length of closed wing. The seven

specimens of Elegant Tern listed in the accompanying table show an average weight of 232 grams. Five specimens of Royal Tern shot at about the same time and place gave an average weight of 489 grams. One example of the Common Tern weighed 113 grams. The other terns in the vicinity at the time the Elegant Terns were met with at Morro Bay were the Arctic and Forster, but unfortunately weights of these were not secured. The last two, however, show about the dimensions of the Common and may be inferred to weigh about the same. As to relative size, then, the Elegant Tern is about half the bulk of the Royal, and yet about twice that of the Common, Arctic or Forster. In other words, the Elegant is fairly midway in size between the Royal and the tern next smaller than itself—obviously a good criterion for recognition when any of the species in question are about.

As to behavior, *elegans* is a typical tern. One observer quoted above thinks that it is more "airy" or graceful in flight than its heavier associate *maxima*. But I confess my own inability to note any decided difference in this respect. Relative size remains the best mark for field identification.

Color notes on *Sterna elegans* were taken by Mr. H. G. White from fresh specimens by direct comparison with the plates in a copy of Ridgway's *Color Standards and Color Nomenclature*, with results as follows:

No. 29579: Bill chiefly coral red, becoming straw yellow towards tip, yellowest at extreme tip. Feet and legs sepia, save for spots of orange on hinder side of tarsus, and same color on soles of all toes. Iris hazel.

No. 29580: Bill ochraceous-orange at base, becoming yellow ocher at tip. Feet and legs black; soles of toes spotted with yellow ocher. Iris hazel.

No. 29581: Bill bittersweet orange at base, antimony yellow at tip. Feet and legs black; tarsus behind, toes, and webs, blotched with bittersweet orange. Iris hazel.

No. 29582: Bill grenadine at base, becoming antimony yellow at tip. Feet and legs black, tarsus solidly so; soles of toes blotched with dull orange. Iris hazel.

No. 29583: Bill salmon color, becoming antimony yellow at tip. Feet and legs black, blotched all the way up, from soles of toes to tibia, with salmon color. Iris hazel.

With drying, the above colors have changed intrinsically but little. Now, after one year has elapsed, there is a general dingy tone, and in the case of no. 29583, which had the bill palest of the five, the red tone, weak at best, has faded out so that the whole bill is dingy yellow ocher. Nos. 29577 and 29578, which were not color-matched when fresh, are also of this yellow-billed type, decidedly different from the reddish orange tone of bill in the other four specimens. With this variation in color of bill in evidence it becomes impossible to use this feature as a field mark.

As regards color of legs and feet, none of our birds has these members solidly black, but they are more or less spotted or blotched with approximately the color of the bill. Ridgway (Birds N. and Mid. Amer., VIII, 1919, p. 472) says, "legs and feet black". Coues (Key, 5th ed., 1903, p. 1007) says: "Feet black; soles and under surfaces of claws slightly yellowish". This latter statement more nearly agrees with the condition of our birds.

As to plumage, the Morro series agrees with Ridgway's description (loc. cit.) of what he terms the "post-nuptial (?) plumage". Note the question-mark. Neither am I able to decide definitely as to age. All seven of our birds are in the same stage, whatever it may be, and all seem to have completed a molt recently. The tail tips are but little, or not at all, worn. In all of the skins there is the eosine pink blush on the underparts, this involving not only

the body proper but also the crissum, the basal half of the rectrices, the axillars, and the lining of the wing. There seems to be no sexual difference in respect to the depth of this blush. Slightly the pinkest happens to be a female (no. 29579). Coues, curiously, states (loc. cit.) that "in winter" there is "no pink blush of under parts". Ridgway, by implication, says that there is; and our birds are all more or less pink.

WEIGHTS (IN GRAMS) AND MEASUREMENTS (IN MILLIMETERS) OF SEVEN EXAMPLES OF *STERNA ELEGANS* FROM MORRO, CALIFORNIA

No. Mus. Vert. Zool.	Sex	Date	Collector	Weight (grams)	Wing	Tail	Culmen	Bill from nostril	Gonys	Depth of bill at middle of nostril	Tarsus	Middle toe and claw
29579	♀	Sept. 22, 1918	H. G. White	226.1	297	151	59.2	44.9	35.2	11.0	29.0	30.0
29580	♂	Sept. 27, 1918	H. G. White	227.2	306	159	64.9	51.1	38.5	11.3	30.7	29.8
29581	♂	Sept. 28, 1918	H. G. White	240.0	298	129	57.7	43.3	31.0	10.8	28.6	31.7
29582	♀	Sept. 28, 1918	H. G. White	209.9	289	132	55.2	41.7	31.4	9.4	27.6	28.5
29583	♂	Sept. 28, 1918	H. G. White	240.0	291	139	61.3	44.3	32.5	10.5	29.7	29.7
29577	♂	Sept. 29, 1918	J. Dixon	262.8	317	158	68.7	53.7	37.7	.....	30.3	31.6
29578	♂	Oct. 2, 1918	J. Dixon	216.8	292	133	60.3	45.0	33.0	11.0	29.7	30.2
			Average	231.8	298.6	143.0	61.0	46.3	34.2	10.7	29.4	30.2

In measurements, as shown in the table given herewith, the Morro series holds closely to Ridgway's specifications (loc. cit., p. 473). It will be noted that the angle of the lower mandible, marking posterior end of gonys, is far forward of the anterior end of nostril, so ruling out the possibility that our birds, or at least those with yellowish bills, might be representative of the species *Sterna eurygnatha* of eastern South America. This possibility suggested itself because this latter species is described (Saunders, Cat. Birds British Mus., xxv, 1896, p. 85) as having a "lemon-yellow" bill, and the "hind parts of the tarsi, the soles, and and the claws dull yellow." *Eurygnatha* is stated to be identical with *elegans* except as to the color features just referred to and as to the extent of the gonys, which terminates posteriorly "immediately below or very little in front of the anterior portion of the nostril". On the basis of sum-total of characters, *Sterna elegans* is a sharply set-off species, and no difficulty need be experienced in identifying specimens in hand. Measurements alone, as given in the accompanying table, will suffice.

In conclusion, the status of *Sterna elegans* in California, so far as known to date, may be stated as follows: Rather uncommon and probably irregular fall visitant northward along the sea coast as far as San Francisco Bay. Definite stations and dates of occurrence: Pacific Beach (near San Diego), September 21; vicinity of Morro, September 22 to October 4; Monterey Bay, September 22 to October 29; San Francisco Bay (date not recorded).

Berkeley, California, September 14, 1919.

FROM FIELD AND STUDY

Association of Migrating Waders.—Mention of collecting a male and female of the Baird Sandpiper by L. E. Wyman in the July-August CONDOR (p. 172), calls to mind observations made by myself on migrating shore birds on the Atlantic coast during recent seasons. It was early noticed that the first birds to come south in the fall as well as the late ones travelling north in the spring, were very often seen two together. At times they appeared to be male and female, which is quite possible to determine in some species without taking specimens, the female being so much larger and longer billed. At other times they looked just alike. At first I took it for granted that these birds were mated pairs, but more recently I have come to have little confidence in that hypothesis. Too often have a couple of boon companions, separated from the crowd and evidently counting a good deal on one another's society, been of different species, a Least and a Semipalmated Sandpiper or even a Ringneck Plover and one of the smaller species. It also appears that three birds travel in company as often as two, perhaps more often in the late summer, and my belief is that these associations are, in general, purely platonic. We know that there are times when we prefer to travel with one or two chosen companions rather than with a crowd, and the more I see of them the more comparable to our own the social instincts of the shore birds appear. This point of view does not rest on sufficiently definite data to be called a scientific observaton, but nevertheless I would like to present it for consideration.—JOHN T. NICHOLS, *New York City, August 15, 1919.*

White-throated Swift in Contra Costa County.—On the left hand side of Pine Canyon, Contra Costa County, about a mile above Ford's Ranch, which is at the entrance to the canyon, are some large rocks containing various ledges and cracks. While passing through the canyon on July 5, 1919, I noticed several White-throated Swifts (*Aeronautes melanoleucus*) sailing about these rocks. I therefore climbed up to see if their nesting site was accessible.

I managed, with stocking feet and small finger holds, to climb up the face of the rock to an almost inaccessible place, where two big rocks come together. In this crack was an unoccupied nest situated on a small wedged-in stone. Four feet above this nest was another which was occupied, as the old bird was flushed. While trying to decide which was the best way to reach this nest, the old bird came back at full speed and swooped up to it almost hitting me in the face. This proves that they do not always slow down in their speed when entering the nest.

After some delicate climbing and balancing, the nest was reached and found to be empty. But right above it, in a small crack, were two young birds almost ready to fly. After trying to poke them down with a small stick I had to give it up as the little birds squeezed farther in the crack. There were more nests elsewhere in the rocks, as about thirty birds were observed sailing back and forth over the canyon.—LUTHER LITTLE, *California Academy of Sciences, San Francisco, California, August 26, 1919.*

Luck.—If the writer had not been possessed of a certain amount of this "article" these notes would not have been written. Briefly told the facts are these.

A certain pair of Nuttall Woodpeckers (*Dryobates nuttalli*) chose a partly decayed fence post for a building site. The same location had been selected by a family of bumble-bees. The woodpeckers started near the top of the post and drilled their excavation downward, while the bees started some two feet below and burrowed upward. The two openings met and the woodpecker remained in possession.

It so happened that Mrs. Woodpecker laid a runt egg which promptly slipped into the trap nest provided by the bumble-bee, and at the time the writer examined the post the small end of the woodpecker egg was protruding from the opening of the bumble-bee excavation, fully a foot below the bottom of the woodpecker's nest. In the woodpecker's dug-out were four normal eggs.

If the runt had been slightly smaller, if the bumble-bee hole had been slightly larger, or if the egg had lodged or broken in its winding journey through the tunnel of

the bee, this tale would not have been written, and the writer would have been short an interesting nest and set of eggs of the Nuttall Woodpecker.—N. K. CARPENTER, *Escondido, California, September 15, 1919.*

Second Occurrence of the Painted Bunting at Solomon, Saline County, Kansas.—A record of the nesting of the Painted Bunting (*Passerina ciris*) near Solomon, Kansas, was given in THE CONDOR, for September, 1918. This year, 1919, I again saw one of the birds near the place where the nest and female were found last year. On June 30, 1919, a male was seen, and it was encountered a second time two days later. I am inclined to think the bird is of more than accidental occurrence in that part of the state and am strengthened in this belief by having seen three males near Chanute, Neosha County. One was seen July 23 and several times later until July 27, a second July 25, and a third July 27, each in a different locality, and several miles apart. I did not look for nests but think it likely that they could have been found, judging from the date of the 1918 nest (June 10) at Solomon. On August 8 still another male was seen just north of Altoona, Wilson County. From these records it would seem that the species occurs regularly farther north than was thought to be the case, or else, what is, perhaps, more likely, its range is being extended northward, possibly from an increase in numbers due to protection. Other Kansas observers may be able to add to our records of the bird.—A. J. KIRN, *Neodesha, Kansas, August 16, 1919.*

A Western Yellowthroat on the University of California Campus.—While working in the gallery of the M. V. Z., on the morning of May 21, 1919, my attention was attracted by a bird-song never before heard by me on or near the Campus. It was faint and directionless through the walls, but I caught enough of it to be keen for an investigation. With the help of Miss Margaret Wythe, I listened from windows on various sides of the building—without, however, hearing the song. The moment I returned to work, I heard it, as faint and directionless as before. Another investigation followed, and another return to work, and so on for half an hour, till I began to imagine that the ghost of a bird's voice was trying to get my ornithological goat, as one might say. But at last, as I listened from an office window, a single clear and near example of the song reached my ears. It was an utterance in four sections, the first three being four-syllabled and exactly alike: *pritisitta, pritisitta, pritisitta, prit,* with accent on the "prit". I had never heard a Yellowthroat song of this exact syllabification, but the chief and important distinguishing character of the song of the species is, after all, its exact repetition of some sort of a two- or three- or four-syllabled "word". Every individual Yellowthroat has quite a stock of different "words", and some are likely to be different from any "words" one would hear another individual sing. Timbre, to be sure, is also a character of the Yellowthroat song—though it varies among and in individuals as widely as does "word"-form. The timbre of this song was hardly typical: it was unusually loose and liquid. The utterance was comparatively slow. Outside the building I found Dr. H. C. Bryant under a bay tree trying to get a look at the singer. He looked as puzzled as I had felt in the gallery. The bird would not show itself except as some sort of a restless flitting warbler with yellow on it somewhere. It went from tree to tree within a limited area round the Museum, returning again and again to trees already visited. It foraged mostly in the bay and pepper trees, but once flew to the top of a large live oak opposite Dr. Grinnell's office window (a favorite place, by the way, for rare visitants to the Campus). We finally decided, in despair, to enlist the services of our doughty field-collector, H. G. White, who soon settled the question by "collecting" the bird. It proved to be a Western Yellowthroat (*Geothlypis trichas occidentalis*)—another new record for the Campus, and one representing a race of Yellowthroat non-resident, and rare even as a transient, in the San Francisco Bay region. It is of interest to note that the bird was foraging exclusively in the high dry tree-tops—whereas one might rather have expected to find it fifty yards away in the tangle of vines and bushes along Strawberry Creek.—RICHARD HUNT, *Museum of Vertebrate Zoology, Berkeley, California, August 1, 1919.*

Evidence as to the Food of the Wood Ibis.—The Wood Ibis (*Mycteria americana*), one of the rarer birds of our state, has long been noted as a bird of peculiar feeding habits. The account given by Audubon and cited by Coues in his "Birds of the Northwest"

(p. 515) will furnish a description of the method by which this bird extracts the food material from the bottom of ponds and rivers and from the muddy water. Analysis of the stomach of a specimen secured at Palo Verde, Imperial County, September 4, 1916, and contained in the California Museum of Vertebrate Zoology, shows the following food elements:

10 seeds of the screw bean (*Strombocarpus pubescens*)
2 seeds mesquite (*Prosopis glandulosa*)
Parts of 4 water beetles (*Cybister* sp.)
Finely comminuted vegetable material.

The seeds were identified by W. L. McAtee and the beetles by E. C. Van Dyke.

This food material is exactly what we might expect to find in the shallow water of the Colorado River. It is of interest that a bird with so large a bill, and with the bill lacking the sieve-like apparatus of a duck's bill, can be so adept at sifting small particles from the water.—Harold C. Bryant, *Berkeley, California, July 1, 1919.*

The Occurrence of the Long-billed Curlew in Northwestern California.—In commenting upon "The Game Birds of California" recently, Mr. H. E. Wilder brought to my attention some facts known to him, but not heretofore published, relative to the occurrence of the Long-billed Curlew along the northwestern California coast. Mr. Wilder has generously urged me to put these facts on record, and furthermore has presented to the Museum of Vertebrate Zoology a specimen of the bird, taken at the mouth of the Eel River, Humboldt County, July 18, 1916. This bird (now no. 30708, Mus. Vert. Zool.) was secured for Mr. Wilder by Mr. Jack Kemp, of Ferndale, and this latter gentleman states that he has shot many of the same species. District Attorney A. W. Hill of Eureka, who spent his early years on the shores of Humboldt Bay, told Mr. Wilder that he had shot many of these curlew there. He said they often came early in the fall before the ducks had appeared. In October, 1918, he saw a flock of seven at the mouth of Eel River.

Later, Mr. Wilder interviewed Mr. Frank Williams of the Russ-Williams Bank of Ferndale, who has spent much time hunting ducks and fishing for salmon along the lower Eel River. Mr. Williams stated that curlew have always been rather common though irregular visitors to that section. He said they usually occur in early fall, and commonly in small flocks; but at one time some years ago they came in great numbers, numerous flocks of 200 or more each being present.

As to subspecies, the bird sent to this Museum by Mr. Wilder falls under the name *Numenius americanus occidentalis*, the Lesser Long-billed Curlew—this on the basis of measurements in comparison with the averages and extremes given by Oberholser (Auk, xxxv, 1918, pp. 189, 193) and by Ridgway (Bds. N. and Mid. Amer., pt. viii, 1919, pp. 391, 394). The bird in question (no. 30708, Mus. Vert. Zool.) is marked "♀", but is so very small for this sex, even in *occidentalis*, that one is tempted to think it more likely a male. It measures, in millimeters: Wing 273; tail 99; exposed culmen 117; tarsus 85.

Of course one example is insufficient evidence that all the curlew visiting the Humboldt Bay region are the Lesser. Further specimens are needed. In west-central California, the larger, Eastern Long-billed Curlew (*Numenius americanus americanus*) is the predominant race during the fall migration, as shown by the considerable number of specimens at hand.—J. Grinnell, *Museum of Vertebrate Zoology, University of California, August 24, 1919.*

Additional Notes and Records from Colorado.—Since the publication in the Auk (xxxv, 1918, p. 236) of "Notes on Some Species New to the Colorado List of Birds", the following occurrences have been brought to light, which supplement those referred to. All specimens upon which they are based are in the collections of the Colorado Museum of Natural History.

Gavia pacifica. The Colorado record of this species is based upon an immature female (C. M. N. H. no. 7003) from the Edwin Carter collection, taken in the vicinity of Breckenridge, Colo., Nov. 15th, 1887. I am indebted to Mr. A. C. Bent of Taunton, Mass., for assistance in making the determination. In referring to the specimen, he writes, in part:—"Its measurements are rather small for this species, but not too small for a young

female; the shape of the bill, with the curving upper mandible and the angle at the gonys, together with the broad, light edgings of the feathers on the back, are distinctive of this species". He mentions this specimen in his "North American Diving Birds".

This is the first record from Colorado for this bird.

Larus californicus. It may be well at this time to correct the records of this gull credited to Colorado from the Carter collection. The specimen upon which one of the supposed occurrences was based (C. M. N. H. no. 7132), has been re-examined, and proves to be an immature Herring Gull (*Larus argentatus*). It was taken near Breckenridge, Colorado, April 28, 1884. All other large gulls from this collection are either this species or the Ring-billed Gull (*Larus delawarensis*), and all efforts to locate any of the other supposed specimens of *L. californicus* have been unavailing. This species should be withdrawn from the state list.

Icteria virens virens. An examination of a rather extensive series of Chats from eastern Colorado has revealed two undoubted examples of the eastern variety (C. M. N. H. nos. 2908, 4711). The first, an adult male, was taken at Holly, on the Arkansas River, within a few miles of the Kansas line, on May 24, 1913. The second, also an adult male, was secured on Dry Willow Creek, Yuma County, June 20, 1915. Others in the series are apparently intergrades, referable to either *virens* or *longicauda*, and it seems not improbable that the two subspecies mingle freely in eastern Colorado and western Kansas.

This is really a restoration of a subspecies to the Colorado list, as Baird, Brewer and Ridgway mention an example of *virens* from Colorado in their "History of North American Birds", a chat having been taken by Thomas Say near the headwaters of the Arkansas River. It is presumed that this example of *Icteria* was secured by Say when he accompanied Major Long's expedition in 1823. Prof. W. W. Cooke was perfectly justified in dropping the subspecies in 1909 (Auk, xxvi, p. 420), on the records as then known, but the bird is to be reinstated on the facts here stated.

Toxostoma longirostre sennetti. Among the unusual occurrences reported from Colorado, few are of such exceptional interest as the specimen forming the record for this southern form. This bird (C. M. N. H. no. 2359) was taken at Barr, Colorado, in May, 1906. It is an adult female and was originally classified as *Toxostoma rufum* and as such passed unnoticed in the series of that species until a recent transfer of the collections. Then its characteristics and misidentification were brought to my attention.

The specimen is typical in every respect, comparing perfectly with examples from southern Texas.—F. C. Lincoln, *Colorado Museum of Natural History, Denver, September 22, 1919.*

California Black Rail at San Bernardino, California.—On August 3 of this year R. B. Herron, one of the oldest ornithologists in California, obtained a live specimen, an adult male, of the California Black Rail (*Creciscus coturniculus*). This fact I consider worth publishing, as, so far as I am able to ascertain, it is a new record from San Bernardino and, with one exception, a record for this portion of southern California. This bird was found in a half dazed condition by a little girl, the daughter of a neighbor of Mr. Herron in this city, and the child, thinking that it was a fledgling that had fallen from the nest, took it to Mr. Herron asking if he could not feed it until it became strong enough to care for itself. Mr. Herron kept the bird, but it died within the next twenty-four hours, when he made a skin of it, which later on he gave to me. The only other record known to me for this section is of a bird taken by Prof. L. Miller at Riverside, California, some time during the month of August, 1893.

The bird obtained by Mr. Herron was in good condition except for a slight abrasion on the head. We have concluded that it flew against an electric light or telephone wire while migrating and was so stunned by the blow that it fell to the ground.—Edward Wall, *San Bernardino, California, August 16, 1919.*

A Second Record of the Buff-breasted Sandpiper in the State of Washington.—The Buff-breasted Sandpiper (*Tryngites subruficollis*) is so scarce a bird on the Pacific coast as to make it seem advisable to publish records of all that we find. It therefore gives me pleasure to state that, when collecting on the Tacoma Flats on September 8, 1919, I was so fortunate as to secure two handsome males of this species. They were together

in the herbage on the bottom of a dried up pond, from which the water had long since gone. This was about a quarter of a mile from water of any kind. A careful search in different directions failed to reveal any more birds of this species, although there was a very extensive migration of land birds as well as water birds. In the stomach of one was the assembled remains of a good sized grasshopper, carefully dismembered, and I was surprised to find that even the coarse, prickly hind legs had been eaten whole.

On the same day I walked up to within twenty feet of a flock of seven Pectoral Sandpipers (*Pisobia maculata*), an interesting bird on the Pacific coast, and watched them for ten minutes. They did not show the slightest fear, feeding up to within a few feet.

Another interesting specimen taken was an adult female Black Pigeon Hawk (*Falco columbarius suckleyi*), which completed my bag of three birds for the day.—J. Hooper Bowles, *Tacoma, Washington, September 11, 1919.*

One Reason for Eliminating Subspecies.—In the recent discussion in the Condor on the multiplication of subspecies no one has put forward a reason against them quite so final as that quoted by Prof. F. W. Oliver in his life of Arthur Henfrey (*Makers of British Botany*). Of this great exponent of the 'New Botany' Prof. Oliver says (p. 201): "He more than once expresses the opinion that there was too great a tendency to lump species in the handbooks to the Flora, and he urged on the occasion of the preparation of the third edition of the *London Catalogue of British Plants* that many more forms should find recognition. The editors of the catalogue however successfully opposed the suggestion on the ingenious grounds that it would raise the weight for postage beyond the limits of a blue (twopenny) stamp."—J. H. Fleming, *Toronto, Ontario, September 4, 1919.*

A Tradition Nearly Broken.—The discovery was made on the fourth of July, 1919. The writer in company with B. P. Carpenter and friends was searching for oological treasure on a small rocky island of the Coronados group off the coast of Lower California.

A number of petrel nests had been unearthed, each of which contained the traditional single egg or young. But in nearly every colony of nesting birds one finds something unusual and this community proved to be no exception. An egg of the Socorro Petrel (*Oceanodroma socorroensis*) was removed from beneath the parent bird which was of unusual dimensions, measuring 1.50x1.12 inches, whereas a normal egg measures but 1.10x.85 inches. Upon blowing the specimen it proved to be fresh, and contained two yolks. Did not this bird have a set of two eggs started, and did not nature rather than have so time honored a custom broken provide but the one shell?—N. K. Carpenter. Hooper Bowles, *Tacoma, Washington, September 11, 1919.*

Some Southern Records of the Horned Puffin.—Judging by the take of specimens the Horned Puffin (*Fratercula corniculata*) has been but a rare visitant along our coast. That this species may at certain times occur in considerable numbers appears to be evidenced by the note in the May-June Condor (p. 128) by Franklin J. Smith, and by the following additional records.

Mr. Wm. C. Bohrmann of San Francisco recently presented to the writer a splendid photograph of a Horned Puffin taken at Mussel Rock, March 2, 1919. The bird was found on the ocean beach still alive, but unable to fly. Quoting from a letter: "I carried this bird in my pocket for a mile or so toward the Cliff House. Had figured that some night-prowling raccoon would get him if I left him on the beach. But he looked so miserably unhappy that I finally decided to give him his small chance for life, and I let him go."

Richard Hocking has furnished material for the following note: Mrs. A. S. Allen and Richard Hocking of Berkeley went to Montara Beach on May 24, 1919, to look for some dead birds seen in the same place a week before. Here were found eight Tufted Puf-

fins, two Horned Puffins, two California Murres and one Cormorant. These birds were scattered in the drift wood and had evidently been killed by oil. One Horned Puffin brought back is now skeleton no. 30714 in the California Museum of Vertebrate Zoology. On May 17, 1919, Mrs. Hocking obtained a Horned Puffin at Coast Ways, near Pescadero, which is now specimen no. 30713 in the Museum.—HAROLD C. BRYANT, *Berkeley, California, June 26, 1919.*

EDITORIAL NOTES AND NEWS

Criticism has come to the Editor of THE CONDOR either directly or, more often, through indirect channels relative to the kinds of articles being published. Such criticism is various, to the effect that our magazine should publish proportionately more local lists, or fewer local lists; more reviews or no reviews at all; more life history accounts; etc., etc. Here is one determining factor, taking into consideration the volume for 1919, which concludes with this issue: We have put out just as many pages (252) as the money available pays for, this being determined by very close calculation on the part of our Business Managers. Now, as furnishing data to govern the Editor in the future, he hereby requests such of our readers as are sincerely concerned for the welfare of THE CONDOR to look over volume XXI critically and to write to him frankly as follows: What class of articles appeared to you as most worth publishing? What class of contributions—reviews, minutes, communications, lists, autobiographies—might have been left out altogether, their place being taken by other, more worthy, matter? What were the best kinds of illustrations, and what others might well have been omitted? The status of the annual roster was settled by vote of the Club early in the present year—and favorably to the continuance of that feature. Now the Editor invites views in regard to the further policy of THE CONDOR as outlined above. We cannot publish any greater amount of material with the limited funds in hand; but we *can* change the *kind* of matter printed to some degree, although limited always by the kind and amount furnished by our contributors. *What are your ideas?*

As regards the splitting of genera, in other words, the determination of the limits of any genus, we would call the attention of our readers to the article in the October (1919) *Auk*, by Mr. Ned Hollister, entitled "The systematic position of the Ring-necked Duck". Mr. Hollister's conclusions in regard to the constitution of the Genus *Marila* are certainly based on a sound and clearly set forth line of reasoning. It will be remembered that it has been recently proposed to set off the Canvasback in one genus, the Redhead in another, and the Scaups in a third! Hollister's careful study of the facts, and of the other considerations involved, shows that *Marila* as it now stands should be "left without any subdivision at all"—with which conclusion we heartily concur.

The current tendency in some quarters toward the suppression of the private collector seems to have gone to great lengths in Minnesota. In Dr. T. S. Roberts' useful and attractive handbook entitled "A review of the ornithology of Minnesota" (May, 1919) we find a statement in the "Addendum" to the effect that permits to collect birds, nests and eggs for scientific purposes are in that state to be issued *only* to public institutions that maintain zoological collections. Dr. Roberts points out that this attitude is directly opposite to that taken by the Federal government and that the effect will be directly toward discouraging interest in ornithology and will eventually lead to a dearth of trained ornithologists. We entirely agree with the stand which he takes.

Mr. George Willett has established himself and family for the winter at Craig, Prince of Wales Island, Alaska. He has arranged to devote practically his entire time to ornithology, and since he is, as far as we know, the first active bird student to winter in southeastern Alaska we may expect valuable results in the way of new facts concerning the seasonal behavior of the birds there. Practically nothing is now known, for instance, in regard to the route of migration of many of the birds which summer in western Alaska and which winter in California. Whether or not they follow the coast line closely, traversing the outer of the coastal islands, or whether they pursue an off-shore route more or less distant from the land, remains to be proved. Mr. Willett's findings will doubtless bear importantly upon this problem.

The Thirty-seventh Stated Meeting of the American Ornithologists' Union was held in New York City, November 11 to 14. Fellows elected were Alexander Wetmore and Joseph H. Riley; Henry W. Henshaw became a Retired Fellow. The only Western Fellow in attendance was Harry S. Swarth, representing the California Museum of Vertebrate Zoology.

Four months of biological field work has been carried forward in the State of Wash-

ington during the season just passed under the auspices of the Biological Survey, U. S. Department of Agriculture. Cooperating with the Survey in the field work at different times were the following: Professor William T. Shaw, State College of Washington, Pullman; Professor H. S. Brode, Whitman College, Walla Walla; Professor J. W. Hungate, State Normal School, Cheney; Professor J. B. Flett, National Park Service, Longmire; Mr. William L. Finley and Mrs. Finley, Portland, Oregon; and Stanton Warburton, Jr., Tacoma. The Biological Survey was represented for a part of the time by Mr. Stanley G. Jewett, Predatory Animal Inspector, Pendleton, Oregon; and throughout the season by Mr. George G. Cantwell, Field Assistant, Puyallup, Washington, and Dr. Walter P. Taylor, Assistant Biologist, Washington, D. C., the latter in charge of the work. Investigations were made in the Blue Mountains area of extreme southeastern Washington, in which occurs an unusual mixture of Rocky Mountain and Cascade Mountain types; and in Mt. Rainier National Park, in connection with which the circuit of Mt. Rainier was made for the first time, so far as known, by any vertebrate zoological expedition. Mr. Cantwell is continuing the survey through the fall and winter, being engaged at present in working the bunchgrass and sage-brush country of eastern Washington.

Mr. Harry Harris, of Kansas City, Missouri, has recently brought to our attention the very interesting details of the trial of the case which tested the validity of the Federal Migratory Bird Treaty Act in the United States Court at that point. It will be remembered that Missouri has been the center of opposition to the provisions of this Act from the start, both on the part of one of the United States senators at the time the bill was before the Senate and subsequently when it came to enforcing the law. It is a satisfaction to all who have been concerned in securing this important achievement in conservation to know that even though the case above referred to was tried in the "enemy's country" the law was decided to be altogether constitutional, and was not "smashed", as many local sportsmen wished, so they could resume spring shooting of ducks.

A move is on foot, the success of which is already guaranteed, to found a memorial in honor of the late Frederick Du Cane Godman, known so favorably to American ornithologists for his work in collaboration with Osbert Salvin on neotropical birds. The memorial in view will take two forms, a bronze tablet, and a foundation to be known as "The Godman Exploration Fund", and it will be administered in the interests of the British Natural History Museum, at South Kensington, England. This institution, through Mr. W. L. Sclater, Honorary Secretary of the Godman Memorial Committee (10, Sloane Court, London, S. W. 1), invites contributions of money for this purpose, and gifts from persons interested should be addressed as above. We heartily endorse the above undertaking, in that it will perpetuate the name of one who in his lifetime contributed, himself, generously toward the development of New World ornithology.

During the years 1914-16 extensive field work was carried on under the auspices of the California Museum of Vertebrate Zoology in a section across the Sierra Nevada from Snelling to Mono Lake, embracing the Yosemite Valley and adjacent scenic spots much frequented by summer visitors to the region. During this period specimens, photographs and notes were gathered with the purpose of drawing up a general report on the vertebrate animal life of the region. Preparation of this report was suspended during the war; but the work has now been resumed. A short supplementary field trip was made during the early summer of the present year by Joseph Grinnell and Tracy I. Storer, of the Museum staff. This trip had as its objective the gathering of additional information, especially on the nesting times and nesting habits of certain of the birds not previously studied to advantage. Camps were established near Snelling and Coulterville in the foothills, and in the Yosemite Valley, while shorter stops were made at three stations near the rim of the Valley. The results were quite satisfactory. All of the facts gathered on this and the earlier field trips are being incorporated into a hand manual which will serve as a guide to the identification of the mammals, birds, reptiles and amphibians of the region, the places in which the species are to be found, their habits, times and places of breeding, their food, and their general relations in the scheme of nature as exhibited in the Yosemite region.

MINUTES OF COOPER CLUB MEETINGS

JUNE.—A meeting of the Cooper Ornithological Club, in affiliation with the Western Society of Naturalists, was held at Pasadena on June 19 and 20, 1919, at the annual meeting of the Pacific Division, American Association for the Advancement of Science. Abstracts of papers presented are published in the Bulletin of the Ecological Society of America, July, 1919. Numerous members of both Divisions were in attendance. As this was in the nature of a special meeting, no

attempt was made to transact formal business.—L. E. WYMAN, *Secretary Southern Division.*

SOUTHERN DIVISION

JULY.—The regular monthly meeting of the Cooper Ornithological Club, Southern Division, was held at the Museum of History, Science and Art, July 31, 1919, with Vice-President Robertson in the chair and W. Lee Chambers, Secretary pro tem. Other members present were Messrs. Appleton, Daggett, Edwards, Hanaford, Sidney Peyton, and Stormont. Otho LaPort was a visitor.

Proposals for membership were as follows: By W. Lee Chambers, Mary E. Raker, Portland, Oregon; Miss Margaret Ware Whitney, Pasadena; Clark Perkins Streator, Santa Cruz; Francis R. Cope, Jr., Dimock P. O., Pennsylvania; Morton R. Cheesman, Murray, Utah; Chester T. Boynton, Highland Park, Ill.; Frederick W. Cook, Seattle, Wash. The name of Leo Brune, Grand Dalles, Washington, was presented by Stanley G. Jewett; Daniel Bernard Bull, San Jose, by L. G. Peyton. Also two from the Northern Division: B. C. Bell, San Francisco, and Harold Heath, Palo Alto.

Letters from George Willett, in Alaska; J. Eugene Law, in Arizona; and Ralph E. Dodge, concerning birds in France, were read, while Mr. Peyton told his experiences in France.

For a summer affair, when so many members are absent from the city, the meeting was considered a success, and certainly was not lacking in features of interest. Adjourned.—W. LEE CHAMBERS, *Secretary, pro tem.*

AUGUST.—A special meeting of the Southern Division, Cooper Ornithological Club, was held at the Museum of History, Science and Art, at 8:00 P. M., August 4, 1919, for the purpose of affording members an opportunity to meet Dr. Witmer Stone. Several of the most active members were away on extended collecting trips, while numerous others were out of town enjoying the vacation season. A hurry call, however, brought out ten, with wives and friends, to give Dr. and Mrs. Stone a proper greeting.

The meeting was called to order by Vice-President Robertson, who delivered a short address of welcome, following which Dr. Stone gave an interesting account of recent experiences in the Chiricahua Mountains, Arizona, where he and Mrs. Stone had spent many weeks collecting in company with Mr. and Mrs. J. E. Law. His description of localities and incidents, and of material collected, was not only highly entertaining, but equally instructive; and the concensus of opinion was that the evening had been a most profitable one to the Doctor's audience. Adjourned.—L. E. WYMAN, *Secretary.*

AUGUST.—The regular monthly meeting of the Cooper Club, Southern Division, was held at the Museum of History, Science and Art, at 8:00 P. M., August 28, 1919. President Miller was in the chair, with other members present, as follows: Messrs. Brown, Chambers, Colburn, Daggett, DeGroat, Edwards, Hanaford, Nokes, Reis, Rich, Robertson, and Wyman.

The minutes of the regular meeting of July 31, and of the special meetings held June 19 and 20, and August 4, were read and approved. On proper action reading of an accumulation of minutes of the Northern Division was declared suspended. Applicants whose names were presented May 25 and July 31 were elected on motion by Dr. Rich, seconded by Mr. Chambers, that the Secretary cast the electing vote. New names presented were: Richard C. Harlow, State College, Pennsylvania, by Wright M. Pierce; Joseph T. Greenleaf, Jr., Seattle, Wash., by Walter P. Taylor; James Haynes Hill, New London, Conn.; Loyal Edgar Smith, Sisson; A. C. Johnson, Whittier; and Mary Cheney, South Manchester, Conn., by W. Lee Chambers.

A letter from Mr. W. L. Dawson, inviting the Southern Division to hold the September meeting at Santa Barbara, at the Museum of Comparative Oology, was presented by the Secretary; but as this date (the last Sunday of the month) was preoccupied by a standing invitation from Dr. L. H. Miller to hold the meeting at his home on the Arroyo Seco, the acceptance of which invitation has become an established custom, the members voted to accept the latter. It was the sense of the meeting that October 25 would be an acceptable date to visit Santa Barbara, and the Secretary was instructed to write to Mr. Dawson to that effect.

Followed a letter from the Biological Survey, relative to lead poisoning among wild ducks, the result of swallowing shot probed from the mud of ducking-grounds that have been shot over for a long period.

Dr. Miller, having just returned from an extended vacation in the Sierras, related many interesting observations in regard to the food and habits of the birds encountered. Adjourned.—L. E. WYMAN, *Secretary.*

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Intermountain Chapter: Get date and place from the Sec'y., Ashby D. Boyle, *351 5th Ave., Salt Lake City, Utah.*

San Bernardino Chapter: Get date and place from the Sec'y., M. French Gilman, *Banning, Calif.*

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A Magazine of Western Ornithology

Volume XXII January-February, 1920 Number 1

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FEB 4 1920
National Museum

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THE CONDOR

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[Issued January 26, 1920]

AUTOBIOGRAPHICAL NOTES

By HENRY WETHERBEE HENSHAW

(*Continued from volume XXI, page 222*)

PROFESSOR SPENCER F. BAIRD

IN HIS historical summation of American ornithology, Dr. Coues has called the period of activity following the Audubonian era the Bairdian period. The name is well chosen, for America has produced no greater ornithologist. Whatever his errand to Washington, no bird lover in those days ever visited the city without calling on Prof. Baird, in his little office in the north tower of the Smithsonian. Baird's love of young men was as great as his modesty and urbanity, and no one ever left his presence without the impression that he had seen and talked with a really great man. So great was his personal magnetism that no one could long know without loving him. His wisdom and sound judgment were ever at the disposal of those in need, especially the young man struggling to gain a foothold on the ladder of science, and it has been given to few men in this country to wield the personal influence in science that he did. Though he had given up all active work in ornithology and other branches of natural science, before I saw him in 1872, in favor of administrative work, he was as keenly interested in the labors of others as ever, and his first question to the man just returned from the field was, "Well, what about the season's work? Tell me all about it".

For years he set apart his winter Sunday evenings to informally receive all friends who chose to call, and many used to avail themselves of the privilege, which insured a cordial welcome and a pleasant evening with the Professor and his wife and his daughter, Lucy. Mrs. Baird's injunction, "Now you must not talk shop in my parlor", was, I fear, frequently disregarded, chiefly owing to the Professor's keen desire to keep in close touch with everything that was going on in the domain of science. Interested as he was in other branches of natural science, I am sure that Baird's first love, the study of birds, ever held first place in his heart.

I saw Professor Baird for the last time just before he left Washington on what proved to be his last visit to Wood's Hole, where he died in August, 1887. A recent visit of several weeks to the place and to the surrounding scenes made

familiar to him by years of association often recalled him vividly to mind, and renewed the keen sense of personal loss which came to me when I first heard of his death. In his paper entitled "An Appreciation of Spencer Fullerton Baird" (*Science*, n. s., vol. 48, July 12, 1918) Professor Edwin Linton, speaking of his death, pays the following tribute to the memory of this great naturalist which so perfectly reflects my feelings and thoughts that I cannot forbear to quote his words. "I remember the day and the hour. It was afternoon, and the tide was low. I recall a picture of a red sun hanging over Long Neck and reflected in the still waters of Great Harbor, of sodden masses of seaweed on the dripping piles and on the bowlder-strewn shore; and there rises again the thought that kept recurring then, that the sea is very ancient, that it ebbed and flowed before man appeared on the planet, and will ebb and flow after he and his works have disappeared; and a singular, indefinite impression came to me, as if something had passed that was, in some fashion, great, and mysterious, and ancient, like the sea itself."

MEETING WITH C. HART MERRIAM

It was in 1872 that I first met Dr. Merriam, then a boy of sixteen, just back from his first trip to the Yellowstone region with the Hayden Survey. He had much to tell of the wonders of the region, which then had been seen only by a favored few, and where he had made a valuable collection of birds, which we examined together with mutual interest. This was the beginning of a close friendship which has endured with no lessening to the present time.

COLLECTING SEASON OF 1873

In 1873 I spent several weeks at Fort Garland in southern Colorado, and here was able to devote more uninterrupted time to the study of birds than at any other place during my connection with the Survey. It was near here, at the base of Mt. Baldy, in June, that I discovered that the Williamson and Brown-backed woodpeckers were one and the same species, the former being the male. Chancing to shoot a female first, almost immediately I shot a male, and, laying them side by side, their relationship was at once apparent. Later I found mated pairs occupying the same cavity in live aspens, their favorite nesting tree, which of course was proof positive of their relationship. While it is true that, contrary to the rule that obtains among the woodpeckers, the male and female of the species are very differently colored, it is difficult to understand why the true facts of the case should so long have escaped the notice of closet ornithologists. The subject is mentioned here, not because of its importance, but because of the great interest the statement of the facts at the time called forth.

While spending a week on the Rio Grande, ninety miles northeast of the fort at the summer cavalry camp, a rather remarkable incident occurred which may be worth mentioning as it could hardly occur today. The ridges above and back from the river were clothed with pines and heavily brushed in places, and at that season (middle June) were a favorite resort of bears, signs of which abounded. One morning I shot a junco out of a small tree, which fell in a dense thicket, and I was a good deal surprised, to put it mildly, when, following the report, a large bear tore through the brush only a few feet away. That he made excellent time his tracks subsequently showed, but as I had the down hill side of the proposition I am sure he did not run so fast as I did. On returning to

claim my specimen, I found that the bird had actually fallen on his bearship as he lay snugly curled up asleep.

The large collection of birds made by me during this season was further enriched by a collection of some two hundred specimens made by Dr. J. T. Rothrock and Dr. C. G. Newberry in Colorado.

ACQUAINTANCE WITH CAPTAIN CHARLES E. BENDIRE

It was in this year also that on my way to Denver for the field season I called on Captain Chas. E. Bendire, then stationed in St. Louis. Some correspondence on bird matters had passed between us, and I received a cordial greeting which led to a pleasant acquaintance of many years' standing. Later, in 1889, I spent a few days with him at Camp Walla Walla, Oregon, where he was stationed for several years. Though the Captain was an enthusiastic and most successful collector of eggs, he was also much interested in birds, and from first to last collected many, not a few of them new or rare. He was, too, an excellent observer, as was abundantly proved when he came to write his "Life Histories of North American Birds" which, to the great loss of ornithology, he did not live to finish. After his retirement, he made Washington his permanent home.

When I found he was in doubt as to the best place of deposit for his magnificent collection of eggs, the fruit of years of collecting in the western wilds, I endeavored to influence him in favor of the National Museum. Though he seemed to be impressed by the advantages suggested he did not at once make up his mind. I therefore explained the situation to Prof. Baird, who talked the matter over with him, with the result that he presented his collection to the Museum. He was appointed Curator of Oology, and for many years had the care of his beloved eggs, and did much to build up the Museum oological collection to the preëminent position it came to occupy.

MEET C. E. AIKEN AT COLORADO SPRINGS

On my way to Washington from Arizona in the fall of 1873 I stopped off at Colorado Springs to make the acquaintance of Mr. C. E. Aiken, with whom I had had correspondence when he was living in Chicago. Finding that he was at his father's sheep ranch at Fountain, a few miles off in the foot-hills, I procured a saddle horse and in a few hours was talking birds with him at the ranch. He had already begun the collection of Colorado birds. The following season, 1874, Mr. Aiken joined the Survey and made a fine collection of birds in southern Colorado, amounting to over three hundred specimens.

APACHES OF ARIZONA

During this trip and that of 1874 I saw much of the Apaches, then somewhat in their primitive state; and a wild lot they were. Though many were armed with guns of antique pattern, they had by no means entirely relinquished the bow and arrow. Most of the arrows were tipped with hoop iron, but some of them had stone points, which, however, they no longer manufactured, so far as I could find out, but picked up, the heritage from a former generation. Many of them still carried long, iron-tipped spears, but these, though wicked looking weapons, so far as I could ascertain served chiefly to play a favorite gambling game which consisted in hurling them through the air to a distance and noting their relative positions. Altogether, they proved the wildest Indians I had ever seen, and confidence in their brotherly love and good-will

was in nowise strengthened by the numerous graves visible along every road and trail we travelled, all telling the same tale: "Killed by Apaches". Many of the headboards testified to the fact that the victims were women and children from distant states in search of homes, and little imagination was required to picture the sad fate meted out to them by unrestrained savage ferocity.

Apparently these particular Apaches had never seen a breech-loading shotgun; and when, near Camp Apache, a couple of them, employed as guides, pointed out to me a bit of cover where a Massena Partridge had taken refuge—a bird I had long looked for in vain—great was their astonishment when I put it up and killed it on the wing as it flew away. A few days afterwards old Pedro, the chief of the band, with a dozen followers, came to our camp with an interpreter and asked to see the man who could kill flying birds with a gun. They examined the gun with great interest, and presently requested to see a specimen of my skill. When I killed a raven as it was flying over the camp I became in their eyes a man of mark, and Pedro, taking me aside, pulled from under his blanket a goodly sized bag of coin which he offered for the big medicine gun, and appeared much chagrined at my refusal to sell it to him.

FIELD SEASON OF 1874

My trip in 1874 from Santa Fe southward across the Gila via Fort Wingate, Zuni, and Camp Apache, to Camp Grant and Bowie not only yielded large collections in the several branches of natural history, but more rarities than any other made by me. Not only was much of the country traversed comparatively unknown, but the attention of the small party of three, consisting of Dr. J. T. Rothrock, Botanist, James M. Rutter, Assistant, and myself, could be given entirely to natural history work. At Camp Grant I obtained the first specimen of the Refulgent Hummingbird, a Mexican species not hitherto detected within our limits. The Santa Rita Mountains yielded another hummingbird new to our fauna, the Broad-billed (*Iache latirostris*), while in the neighborhood of Camp Bowie was found still a third species, the Slender-tailed Hummer (*Calothorax lucifer*). The beautiful little Red-faced Warbler, also new to our fauna, was found to be not uncommon near Camp Apache and on Mount Graham, while at old Camp Crittenden two other additions to our fauna were made —the Yellow-bellied Flycatcher (*Myiodynastes luteiventris*), and the Arizona Woodpecker (*Dryobates arizonae*).

Even on this, my most productive trip, however, comparatively little time could be spent in any one locality, and a day or two of hurried work was often all that could be spared to a locality which would have well repaid weeks or even months of labor, as was proven by the results obtained by other collectors years after my brief visits. Moreover, the changed conception of species and subspecies, and the accumulation of series of specimens from various parts of the country, especially in private collections, resulted in the description as new of many birds first collected by the Wheeler Expedition. Some of these, indeed, were thought to be new when collected, but were passed by until their status could be more satisfactorily determined by additional specimens or larger series. As examples I may cite the following:

Baeolophus inornatus griseus, Iron City, Utah, 1872; *Hylocichla fuscescens salicicola*, Fort Garland, Colorado, 1873; *Certhia familiaris montana*, Camp Apache, Arizona, 1873; *Otocoris alpestris arenicola*, Denver, Colorado, 1873; *Meleagris gallopavo merriami*, Camp Apache, 1873; *Junco cinereus palliatus*,

Mt. Graham, Arizona, 1875; *Chamaea fasciata henshawi*, Walker's Basin, California, 1875; *Hylocichla ustulata oedica*, Santa Barbara, California, 1875; *Aphelocoma insularis*, Santa Cruz Island, California, 1875.

FIELD SEASON OF 1875

In 1875 the operations of the Survey extended to California, which I had long desired to visit. Field work began June 1, when Dr. Rothrock, Dr. Loew, and myself visited Santa Cruz Island in the Santa Barbara Channel, then almost wholly given up to sheep raising, for the purpose not only of making natural history collections but of participating in the investigations of Paul Schumacher, who was then engaged in archaeological researches in behalf of the Smithsonian Institution. Though only a few days were spent on the islands a number of interesting birds were collected there, including the types of the Island Jay (*Aphelocoma insularis* Henshaw). Here also, were obtained the first specimens of the Island Shore Lark, subsequently named by Townsend. *Otocoris alpestris insularis*. Mr. Ridgway and myself both believed this insular form to be distinct, but as the specimens I secured were in extremely worn plumage, I decided to wait the reception of better specimens before describing it as new.

Santa Cruz Island, and probably also the other islands of the group, was then inhabited by a small race of the gray fox (*Vulpes littoralis*) which not only existed in incredible numbers, but was so tame as to permit its habits to be studied at close range. Having apparently no enemies the foxes had not contracted the fear habit, and, indeed, exhibited more curiosity than fear.

June 15 we joined the main party at Los Angeles, then only a small hamlet with a population containing a large admixture of Mexicans and with little about it to suggest the metropolis of later years. The pasture in which we camped and made ready for the field is now in the heart of a populous and ever growing city.

At Los Angeles the original plan of field work was changed so as to permit a small party to return to Santa Barbara with a pack outfit, and prosecute archaeological researches in that neighborhood under the direction of Dr. H. C. Yarrow. We reached Santa Barbara June 24, and I was greatly impressed with the beauty of the place. The town was then in very primitive condition, a quaint old-fashioned Spanish settlement, with no connection with the outside world by railroad and with only two steamers weekly. Almost entirely hemmed in on three sides by lofty and picturesque mountains and sea girt on the fourth side, it possesses a climate of its own, and I afterwards came to consider it the most inviting place on the Pacific to live in, an opinion evidently shared by thousands of others who have made the place their permanent home.

Having obtained permission from the Moore Brothers we made Moore's Island our base camp, this being ten or more miles from the town. Here we were engaged till July 13 excavating the Indian burial places which abounded in the vicinity, and also in making natural history collections.

The Santa Barbara Islands and adjacent mainland were apparently thickly populated till well within historic times by kindred tribes whose chief subsistence was gained from the sea, which teemed with fish and mollusks and, in those days, with seals and sea-otters. The old cemeteries were easily found, as the natives apparently always marked their site by placing above the dead the bones of whales; and tons of Indian belongings, mostly of steatite, includ-

ing mortars, pestles, dishes and utensils of various sorts were unearthed and sent to Washington to enrich the National Museum and other museums throughout the world.

July 13, the work at Santa Barbara being finished, the party marched to Old Fort Tejon, via the Casitas pass to the Ojai and Santa Clara Valley, through San Francisquito Pass to La Liebre ranch and past Castac Lake to the Tejon. Here a month was spent in collecting in the general vicinity. Near the old fort were taken the first specimens of the Pallid Wren-tit. Subsequently specimens were secured in Walker's Basin, which was designated by Ridgway as the type locality of the form. September 4, our party merged into a larger one, and we set out for the Mount Whitney region where we stayed till into October, when we proceeded to Walker's Basin and spent about a fortnight, and then repaired to Caliente and disbanded for the season. During this trip, 700 bird skins were collected, included in 127 species.

One of the notable California birds I particularly desired to see was the California Condor, the largest of its kind, and one of the largest birds in the world, which at that time was supposed to be approaching extinction. No man's hand was raised against it, but hundreds fell victims of the poisoned meat which the sheep herders put out for the purpose of killing the bears, cougars, and coyotes which preyed upon the sheep.

Though I kept a sharp look-out for the bird, it was not until several years later (1884) that I enjoyed the sight of a live vulture. While at the San Antonio Mission, in what is now Monterey County, September 27, engaged on Indian work, I saw four individuals circling about high in air and a notable sight they were. Finding that they were still not uncommon in the region I hired a hunter to obtain specimens, and in a few days was gratified by the possession of three. Two of them I weighed and measured. One weighed twenty pounds, and had a spread of wing of eight feet, nine inches; the other weighed twenty-three pounds with a spread of nine feet one inch. Females are no doubt still larger. It is a pleasure to record that at this time of writing the condor is still extant in several of its native haunts, though apparently not so numerous as when I obtained my specimens.

FIELD SEASON OF 1876

The field season of 1876 was unusually short owing to the late date of our appropriation and it was not until the last of August that I began work at Carson, Nevada. After collecting in that neighborhood for about a fortnight I left for the Lake Tahoe region September 15, where I remained until November 20, going from there to Washington.

MEET H. G. PARKER

It was in Carson that I first met H. G. Parker, one of the early day gold hunters of California, a resident of the place who laid me under many obligations for aid in my work, not only during that season, but several subsequent seasons. Though not a scientific man, he was an ardent sportsman and an enthusiastic collector of birds (for others), and he spared neither labor nor expense in aiding the ornithological collector who chanced to visit his neighborhood. He held Robert Ridgway in high esteem and had been of service to that young ornithologist in 1867-9 during his connection with the Survey of the Fortieth Parallel under Clarence King. The shortest and surest road to "Hubb

Parker's'' heart was to allow him to render you some substantial service. He died in San Francisco in 1888.

MEET E. W. NELSON

In the fall of this same year, on my way to Washington from California, I made the acquaintance of E. W. Nelson in Chicago. He had become known to me through a record, published in the Bulletin of the Essex Institute, of the capture of specimens of the Sharp-tailed Finch near Chicago (subsequently described by Allen as *Ammodromus caudacutus* var. *nelsoni*), and an exchange of specimens had followed. This casual visit of an hour or so was to prove the beginning of another life-long friendship, and to very materially affect Nelson's subsequent career.

Soon after my return to Washington, Prof. Baird offered me a chance to go to St. Michael's, Alaska, as a signal observer, with a view of collecting and studying the fauna of the region. Though, in many ways, the offer was a tempting one, I was too much interested in my work in the western states to abandon it for a new field, but told him, in response to further questioning, that I knew exactly the man he was after. As a result Nelson accepted the offer immediately made him by Prof. Baird, and, as an employee of the Signal Service, spent nearly five years (1877-81) in the Arctic, which proved the initial step of his subsequent career as a naturalist. For the ornithological results obtained during Mr. Nelson's memorable stay in Alaska I would refer the reader to his report published as No. 3 of the Arctic Series of the Signal Service, U. S. A., and entitled ''Report upon Natural History Collections made in Alaska between the years 1877 and 1881''. At the time of publication, as Mr. Nelson was sojourning in the west because of ill health, at the request of the Chief Signal Officer, Gen. A. W. Greeley, and himself, I undertook the pleasant task of editing the report and seeing it through the press.

FIELD WORK OF 1877

In 1877 the field work again began at Carson, where I spent the time between May 12 and June 6. Leaving Carson we pursued a generally northern route till we reached old Camp Warner in southern Oregon, our field work ending October 1. About 200 specimens of birds were obtained during the season, and between six and seven hundred eggs were collected, chiefly of water birds.

While at Goose Lake, northeastern California, I obtained specimens of a remarkable little rabbit, which Coues and Allen identified as the Trowbridge's Hare (*Lepus trowbridgei*) but which later proved to be a new species, and was described by Merriam from specimens obtained by the Biological Survey in Idaho as the Idaho Rabbit (*Brachylagus idahoensis*).

While on a visit to Cambridge this year Mr. Brewster called my attention to some hummingbirds he had received from C. A. Allen of Nicasio, California, near which place the birds had been collected, and which the collector believed to be new. Sharing in this belief Mr. Brewster generously turned the specimens over to me for further study and final disposition, and they were duly described by me as *Selasphorus alleni* in compliment to the man who had first brought the species to notice.

FIELD SEASON OF 1878

The field season again began at Carson, July 18, and continued till October 1, when it ended for me at the Dalles on the Columbia. From the Dalles I took the steamer down river to Portland, Oregon, and thence to San Francisco.

where I remained for a short time before returning to Washington. Two hundred and thirty-seven birds were collected during this trip and also numerous specimens in other branches of natural history. The field seasons 1877-78 were spent in the eastern portions of Nevada, California, and Oregon, and the routes travelled amounted practically to a continuous, though decidedly tortuous, line from Carson to the Dalles.

THE WHEELER SURVEY TERMINATED

My connection with the Wheeler Survey terminated in 1879, its work having been merged into that of the recently formed (March 3, 1879) United States Geological Survey, under Clarence King as first Director. The question of my future thus arising, I imparted to Prof. Baird my strong desire to join the National Museum staff as Assistant Curator of Ornithology, Robert Ridgway being then, as now, Curator. This he decided was impracticable owing to the low state of the funds of the Institution and to the prominence already given to the department of ornithology. He offered me, however, a position on the staff as Curator of Herpetology. As I was less interested in this branch of science, to which I already had paid some attention, than in others, I declined the offer and finally accepted the invitation of Major Powell to attach myself to the Bureau of Ethnology, then being organized, with the understanding that if the new field proved to be congenial I should make it my life work. Major Powell accepted the Directorship of the Geological Survey, Clarence King having resigned.

Thereupon for some years to come my ornithological studies ceased, the administrative and other duties that soon devolved upon me in my new position proving an ample tax upon my time, strength and such abilities as I possessed. I may add that it was Major Powell's opinion that a biologic training was a prerequisite to a successful career in anthropology, and this opinion he held to the last.

(To be continued)

IMPORTANCE OF THE BLIND IN BIRD PHOTOGRAPHY

By FRANK N. IRVING

WITH SIX PHOTOS

AS THE photography of birds usually presents a difficult problem to the beginner the suggestions set forth in the following paragraphs may prove helpful to those workers who desire to undertake something worth while in this field. Although I have been a student of ornithology for many years and have pictured and collected the nests and eggs of many species, it is but recently that I have taken up photography of the birds themselves, and I am prepared to state that there is a peculiar fascination attending this sort of work which should afford a great deal of genuine pleasure to all lovers of nature. It requires a certain amount of skill and patience to produce a series of really excellent bird photographs; but the proper course of procedure, coupled with the usual persistence of a bird hunter, will soon remove most of the obstacles.

The most satisfactory method of procuring bird "portraits" is to construct a blind such as will afford the necessary concealment of the photographer and his camera equipment. Much has been written on the subject, and blinds of various styles employed, all no doubt with a certain degree of success. The "string pull" and other similar methods of photographing birds from a distance can but result in a great deal of wasted energy and material, with an occasional good picture a matter of chance. For truly satisfactory work the blind is an essential feature and may be of any one of several designs; and it should be sufficiently large to comfortably house the operator and his camera. The pattern used in making the pictures reproduced herewith is original and has proven a remarkable success in every detail. A more complete description than here given will be furnished gratis upon request.

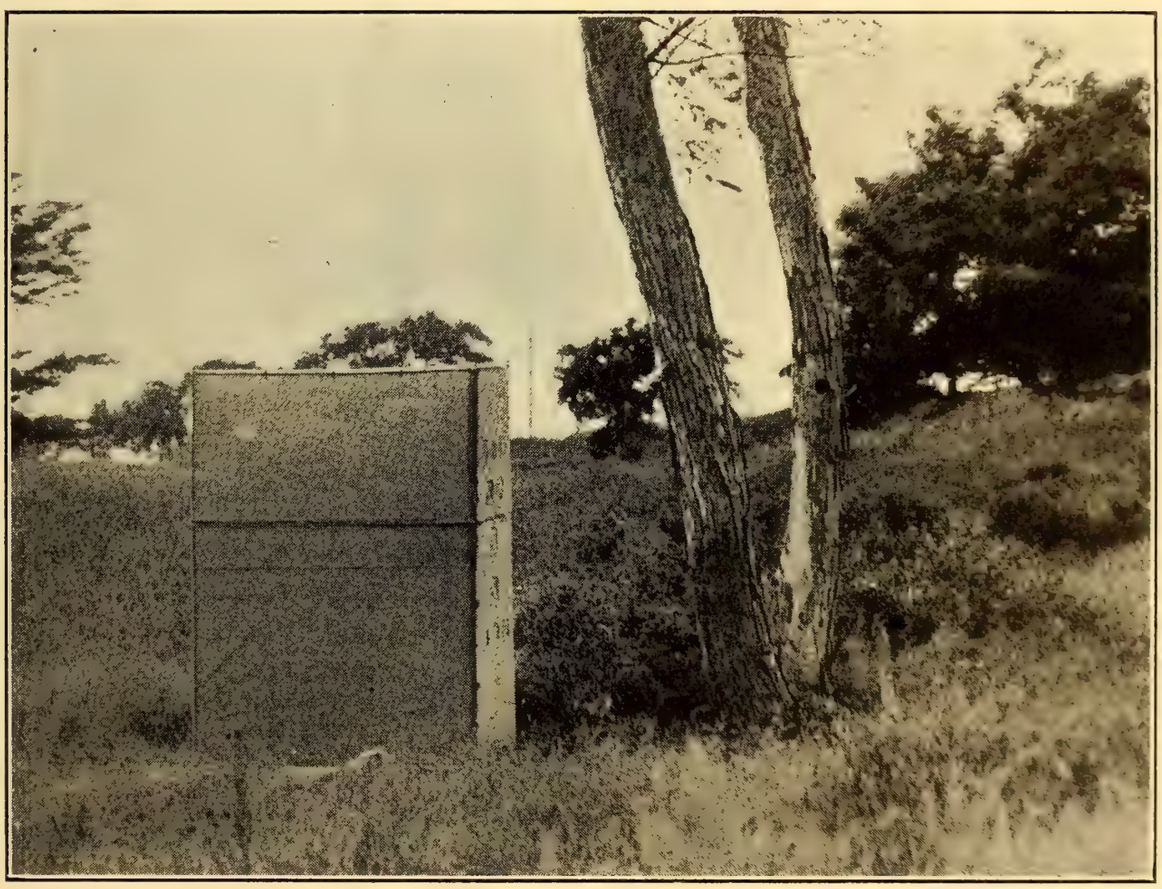

Fig. 1. Illustrates structure and position of blind used in securing the pictures which follow. Entrance to Flicker's nest shows in right-hand tree trunk.

My blind is 2½ feet wide, 4 feet long, 6 feet high and covered with aeroplane cloth, a drab-colored, waterproof material which when rolled into a compact bundle can be easily carried on the shoulder. The cost of the entire outfit was something less than seven dollars, and several hours each evening for about a week were required to complete it, although I worked along a more elaborate scale than was necessary, with a view of having a blind which would last indefinitely. Nevertheless I feel well repaid for my efforts.

A special knowledge of the habits of birds is really of no great importance at the outset; much useful data will be gained by observation when the work is in progress which could not be acquired in any other manner. It is well to know the names of those species which are destined to become the subject of one's ef-

forts, however, and to select the larger species of such colors as will photograph well on the ordinary plate, thereby securing a much larger image in nearly correct monotone than could be realized of most small birds such as have markings of red, yellow or blue, and, not of least importance, the advantageous speed qualities of the fast plates.

The style of camera is an important feature, and one of the best adapted to this work is the 4x5 or, if preferred, the 5x7 size, with sufficient bellows extension to accommodate a lens of not less than 12 inch focal length. If the expense

Fig. 2. Male Flicker at nest entrance, just arrived and in feeding position.

is not prohibitive, by all means select a reflecting model. I have but one camera outfit of this kind, which I find entirely adequate, regardless of the contention that several are necessary. This is the Naturalist's Graflex, fitted with the no. 19 Zeiss Protar lens, a luxury it is true, but there is a distinct pleasure in knowing that it will produce results under conditions when no other camera of ordinary type seems effective. A tripod is desirable as it will eliminate the necessity of holding the camera and will insure a rigid front against the opening in the blind; otherwise the lens would appear a moving object and alarm the subject.

In anticipation of a beginning in bird photography, the question arose as to the correct exposure for average light conditions, and although I purchased two exposure meters of different makes, and searched through all available material on the subject, I failed to obtain the desired information. I learned by experiment however, that between the hours of ten and three o'clock, in bright sunlight, with a lens working at an aperture of f. 6.3, 1/350th of a second exposure will give satisfactory results and afford a good working basis which may be modified to suit individual preference.

Such birds as the flicker, wood thrush, cedar waxwing, brown thrasher, robin, mourning dove, cuckoo, king rail, clapper rail, mockingbird and many other well known, common species, usually construct their nests at low elevations, and during the nesting period are easily approached. They present desirable subjects and will be found practically fearless when the young are yet but a few days old, permitting work from the blind at close range with little evidence of concern.

Fig. 3. Male Flicker showing extreme timidity, ready to spring off at a moment's notice.

One spring morning I walked through a pasture in search of anything feathered suitable to photograph and had the good fortune to locate a family of Flickers (*Colaptes auratus*), situated in a hollow six feet from the ground. This hollow, or cavity, was excavated in an old willow. Returning the following day with the paraphernalia I pitched the blind five feet distant, set up the camera on the tripod, adjusted the focus and shutter, care being taken to "sky" the entire area covered by the ground glass, and, everything ready, awaited the return of the parent birds.

A few moments later, while congratulating myself upon having selected a beautiful day, with a bright sun directly at right angles to the cavity, which faced the north, thereby permitting a well lighted "broadside" view of the subject, one of the adults returned and perched on top of the tree, some thirty feet up. This proved to be the female and I could hear the scratching of her claws on the bark as she began a gradual descent. The young were on the alert and upon the first intimation of the parent's return, set up a peculiar hissing sound, characteristic of the family Picidae. A few moments passed and the parent settled into a feeding position with head opposite the entrance; I glanced at my watch to find that it was 11:08 and pressed the release, making the first

exposure just eighteen minutes after entering the blind. Quickly changing plates I made another exposure, both with the diaphragm at f.11 and the curtain set at 1/90th second.

The young are fed by regurgitation and I now proceeded to watch this interesting performance through a corner of one of the photographic windows. What a remarkable sight it was to view the actions of the adult, all unconscious of my presence, at a distance of but five feet. The young, being of considerable size, scrambled up to the entrance, and several with heads protruding received the food which was pumped into their throats by this curious method possessed by numerous species of birds. During the course of regurgitation there was an extremely rapid motion of the head and wings, an action upon which this function undoubtedly depends.

Fig. 4. An attempt was made to catch the male in the act of feeding, with the camera set at high speed; but he ceased operations just as the release was pressed.

The female paid but little heed to the blind, but was rather alarmed at the "eye" of the camera, appearing nervous and watching it constantly while feeding the young, which process she accomplished in feverish haste and quickly departed. At 11:15 the male appeared, "drooping down" gradually from aloft, on the opposite side of the tree, peering cautiously around at the obstruction and watching the "eye" nervously; but he did not venture to feed, and flew off shortly after. This occurred again with the male at 11:45.

At 11:48 the female returned, flying direct to the cavity and exhibiting less fear than heretofore, permitting several exposures while feeding was in progress; after this she entered the cavity for the purpose of cleaning the nest, and, at the moment she reappeared with a large portion of excreta in her bill, I made another exposure in this position.

At 12:10 the male returned to reconnoiter, flew away and was back ten minutes later, appearing anxious to feed the nestlings but in a highly nervous state and evidently suspicious to a degree. It was not until the following day that I obtained a picture of the male, when, but a few minutes after I entered the blind, he arrived, alighted on top of the tree and at once commenced a downward scramble, peering cautiously to right and left, calling softly and frequently tapping the bark. Presently I could see his tail, which came into the screen first; a few more seconds and the bird appeared opposite the entrance, afford-

ing opportunity for two exposures. Now I was due for a surprise, in that the male, so timid and cautious, came direct to the entrance and having apparently dispelled all fear, began to regurgitate, a comical sight as he gulped until his neck had swelled as though inflated; then with bill full to the overflowing point he quickly fed the young (from the outside of the cavity) and assumed a "spring off" position, all of which actions were caught with the camera, as I secured five exposures before he departed. The birds are not disturbed at the

Fig. 5. THE FEMALE FLICKER, PREPARATORY TO FEEDING; DISTANCE FROM CAMERA TO NEST ENTRANCE, FIVE FEET.

Fig. 6. FEMALE FLICKER AFTER CLEANING NEST AND ABOUT TO DEPART WITH EXCRETA IN HER BILL; THIS MATERIAL IS ALWAYS CARRIED TO A CONSIDERABLE DISTANCE FROM THE NEST SITE.

sound of the release or shutter mechanism, the lens being the real object of their anxiety.

At no time was there any visible food substance in the bill of a parent bird, although it would begin regurgitation immediately when opposite the entrance, feeding two or three of the young which may have climbed to the opening, and then would enter the nest to feed the other members of the family. The food

consists chiefly of ants, which are fed to the young in the form of a paste. Many thousands of ants must be consumed by the family in a single day.

It is truly a wonderful experience, not devoid of little thrills and excitements, to watch and picture such handsome birds in the course of their parental routine, almost at arms length; and the beautiful enlargements on the walls in my home serve to recall the many pleasant hours which I have spent in field photography.

Kansas City, Missouri, September 21, 1919.

THE RUSTY SONG SPARROW IN BERKELEY, AND THE RETURN OF WINTER BIRDS

By AMELIA S. ALLEN

ON March 29, 1919, a Yakutat Fox Sparrow (*Passerella iliaca meruloides*), one of half a dozen Fox Sparrows which come regularly to my window for food, was accidentally caught in the house. I took the opportunity, before setting it free, to band the bird, as I wished to get some evidence as to the identity of the individuals which come from year to year to this particular feeding-table. This banded bird remained several weeks after he had been marked, but emigrated, about April 21, with the rest of his kind, no doubt to Alaska to spend the summer months. In the fall, returning Fox Sparrows were noted as early as September 25, but it was not till November 3 that the banded Fox Sparrow was seen.

This is the first instance in which I have been able to prove, what I have long suspected to be a fact, that a migratory bird has returned to a favorite niche after its long journey to and from its summer home. The behavior of the group of birds which feed at my table has been very convincing to the daily observer, but an actual tag brings the matter quite up to certainty. These half dozen Fox Sparrows are practically alike, presenting no marks to differentiate male from female, old from young. No doubt part of the number each year are birds of the year, but now I am sure of at least one adult that has been here before.

Among the Golden-crowned Sparrows a few are definitely in juvenal plumage. These, during the early part of the season, are quite nervous when they come to the table, raising the crown feathers and stretching the neck and legs, alert in every muscle. This attitude contrasts strongly with the squat position of the birds in adult plumage which settle down to a comfortable at-homeness which argues very favorably for their having been here before.

It was, however, the case of the Rusty Song Sparrow (*Melospiza melodia rufina*) which made me feel most firmly convinced that the same birds were returning year after year. I first made the acquaintance of the Rusty Song Sparrow on January 5, 1915. It was easy to see that the newcomer was not a Santa Cruz Song Sparrow, for he was perceptibly larger and at a little distance seemed to be colored a uniform reddish brown except for a light line over the eye. Closer scrutiny revealed the fact that the reddish brown of the back was streaked with a darker shade and that the breast was buffy, densely spotted with brown. These

colors all blended together instead of being contrasted as the black, gray, brown and white are in the Santa Cruz Song Sparrow's plumage. True to the northern type, the Rusty Song Sparrow was also more deliberate and less nervous in his motions, though at the same time more shy than his cousin. He seldom appeared with the first birds that crowded in as soon as the meal was ready. He was often first discovered gleaning from the ground the seeds that had been brushed from the table by excited rivals. Later in the day he usually had everything to himself and showed by his confidence on the table that his shyness was due to the proximity of the other birds rather than to my presence at the window.

I was much interested in observing this bird, since it was the only one of its kind to partake of my hospitality and, so far as I could discover, the only one so far recorded in this immediate locality. So it was with a genuine feeling of regret that I noted his absence as the spring migration season arrived (March 17, 1915). However, when the fall migrations were nearly ended and the winter birds were settling down to regular feeding, he suddenly appeared again, making himself quite at home, coming and going just as he had been accustomed to do in the spring. Of course, I cannot state positively that it was the same bird, but it seems to me very probable. No one would question whether it was the same bird that appeared from day to day, since there was never more than the one. The rarity of the species argues strongly also in favor of the thesis that it was the same bird that returned on October 29, 1915.

With the exception of an absence of a few weeks in midwinter (his return was noted on January 18, 1916), the big brown song sparrow remained until March 27, 1916, when the urgency of the migration instinct again sent him to his summer home. The next fall he did not wait so long, but returned to his chosen winter resort on September 29. I fear that it was a disappointing year for him, for illness in my family interfered with the regularity of meals for the bird-guests during the fall, and I was away from home in the spring. Absences of the Rusty Song Sparrow were noted several times during the fall, and though the birds were fed during the spring (1917), he may not have been among the guests. This may account for the failure of the bird to return in the fall of 1917. Indeed, I supposed that I had seen the last of him. So it was with quite a thrill that I found him again feeding quietly at the table on March 2, 1918. There was evidently time to spare before completing his northward journey, for he remained until March 27.

In the fall he was back again in his chosen niche by October 29 and remained till December 26. I made sure that he was well fed, but for some reason he was not seen after that date, not even during the spring migration in 1919.

On September 23, 1919, a Rusty Song Sparrow was seen in the tree above the feeding table busily eating worms, but he has not been seen again to date. I still feel doubtful of his identity, for if it was the same bird, one would expect him to recognize the fact that seeds and other food to a song sparrow's taste were spread on the table below. But leaving out of account this year's sparrow enough evidence has accumulated during the five seasons that the Rusty Song Sparrow has spent here, to give rise to many interesting conjectures and questions.

The range of this particular bird is supposed to extend from southern Alaska to California, the southernmost record in this state being from Riverside (see Grinnell, *Distributional List*, p. 123). It is resident throughout the year in

Washington, Oregon, and British Columbia, but in Alaska it is a summer visitant only (see Swarth, *Alaska Expedition of 1909*, p. 89). Mr. Swarth's recent study of the different races of Fox Sparrows shows that those which pass the summer farthest north have their winter homes in the southern part of the range of the group as a whole. Some other birds show the same tendency. It is easy in Berkeley to observe the migration of Pileolated Warblers after the race which nests in this locality has settled down to domestic life.

If the same thing happens in the case of the Rusty Song Sparrow, it would seem probable that my visitor summers in Alaska, in the only part of the range which does not support these birds during the winter months. A feeding-table in California has proved an attraction which has led the bird to return year after year. But he has never brought another of his own race with him. How much longer will he come? How many years does a migratory bird live?

The evidence presented by the return of the banded Fox Sparrow and the Rusty Song Sparrow seems to show, in addition to the wonderful sense of direction which guides birds in their migrations, a very strong attachment to a locality as long as favorable conditions exist there. They have proved that they can find their way from one spot to another perhaps thousands of miles away and back again to the same spot. If they can and do return to their winter niche, it seems to me not unreasonable to suspect that they may do the same thing in the summer time. Many of the arguments recently presented favoring the theory of a permanent marital tie among birds seem to me to point to the probable remating of a large number of former pairs as brought about by this attachment to a definite locality. Changes effected by tragedies and by the influx of the new generation might account for exceptions to a general rule. Until, at least, more evidence is collected as to the actual return of birds to the same locality, the question of frequent re-mating is not disposed of, no matter how weak the biological evidence for a permanent marital union may be.

Berkeley, California, December 8, 1919.

A PECULIAR FEEDING HABIT OF GREBES

By ALEXANDER WETMORE

MANY ornithologists have commented briefly upon the fact that quantities of feathers almost invariably are present in the stomachs of grebes, a peculiarity that has been without apparent explanation. The present writer through reading and personal observation has been familiar with this condition for many years, and recently, during a study of the food of our North American Grebes (for which the stomachs of nearly four hundred individuals were examined), has had it brought to his attention most forcibly. The following notes based upon personal observation, while presented as theoretical, may be of assistance in throwing light upon the reason for this strange diet.

The stomachs of our grebes are large and capacious, with strong muscular walls, though the thickened lenticular muscle masses characteristic of the gizzards of gallinaceous birds, ducks and others of similar food habit are absent. The upper division of the stomach, the proventriculus, into which the gullet opens, is thick-walled and strongly glandular over its entire inner surface. The stomach proper or ventriculus, as is usual in bird stomachs, has on both sides rounded tendinous areas from which muscle fibers radiate to the margins. On one side the surface of the ventriculus is smoothly rounded, with the fasciae of the muscles radiating over it in bands that are stronger and better marked toward the lateral margins (not toward the anterior or posterior ends of the stomach). On the opposite side of the ventriculus is found a protruding lobe or pyloric bulb of large size that is bent downward; to the lower end of this is attached the duodenum. This pyloric diverticulum extends down to a point level with the central tendon on this face of the ventriculus and by its projection interrupts the even radiation of the muscle on this side. The diverticulum is set at a slight angle with the axis of the stomach, with the point projecting outward. As the muscle band from the central tendon crosses the upper margin of this bulb it becomes much stronger so that here it is five or six times as thick as elsewhere on the stomach. After crossing the lobe the muscle is reduced at once to its normal thickness and proceeds to its insertion at the base of the proventriculus. Examination of the inner structure of the stomach shows that the lobe forms a small chamber opening from the more capacious cavity of the stomach proper. Contraction of the muscle band described above would press the inner wall of the neck of the lobe firmly against the stomach wall opposite, closing off the small chamber completely, and preventing the egress of food matter. It acts therefore as a great valve that opens and closes as needed. The pylorus is constricted to a very small opening, beyond which the canal of the duodenum expands immediately to a diameter three times greater than at the opening.

In the following table are given outside measurements of the stomachs of five species of grebes taken from specimens that were well-filled with food. Stomachs that are nearly empty are contracted so that they appear much smaller, or if crammed may be somewhat larger than the dimensions given here.

OUTSIDE MEASUREMENTS (IN MILLIMETERS) OF STOMACHS OF GREBES

Species	Length of proventriculus	Length of ventriculus	Length of pyloric bulb
Aechmophorus occidentalis	30	80	25
Colymbus holboelli	40	55	25
Colymbus n. californicus	18	38	14
Colymbus auritus	25	40	13
Podilymbus podiceps	28	50	24

With a very few exceptions feathers were present in the stomachs of all of the birds examined. In some individuals the ventriculus was crammed with them; in others the feather content was comparatively small. The pyloric lobe was invariably filled with a plug of feathers (except in the few stomachs that contained no feathers) that had been partly ground up and digested. The feathers in the ventriculus and the pyloric lobe formed two separate well-knit masses that usually could be distinguished without trouble in looking over the contents of the stomach after it had been removed. The proventriculus was always empty, as its function in this group is to supply digestive juices, not to act as a container for food. The feathers swallowed were, in the main, contour feathers from the

breast, with a few from the back. In a few birds taken during the season of molt in August and September, a few primary feathers from the wing were found, but this was unusual.

In field observation the writer frequently has watched Eared Grebes and others preening and dressing the plumage. The body covering of feathers in these birds is dense and heavy, and many feathers are loosened during their active movements. Feathers that came out during preening were occasionally discarded, but more often were dabbled in the water until well moistened and then were swallowed. Occasionally during the breeding season when Eared Grebes were in pairs, feathers discarded by one bird were seized and swallowed by its mate. Parent birds apparently feed feathers to the young as soon as they are large enough to take the food of adults, as fully formed contour feathers were found in the stomachs of young that were still covered with down. It is possible that these young birds picked up floating feathers of their own volition, but it seems more probable that they received them from their parents. These are the only cases in which grebes seemed to eat feathers that were not taken from their own bodies.

After feeding, grebes begin the care of their plumage. The feathers that come out during this process are swallowed and serve to keep the stomach comfortably full as the food elements are prepared and passed on into the intestine. The feathers swallowed are ground up and eventually enter the intestine, though a plug of them remains in the pyloric lobe. These seem to represent the feathers remaining from the preceding meal as they are often more broken than the feathers taken with the food that fills the ventriculus at the time. Thus the plug in the pylorus seemingly is renewed with the digestion of each mass of food. There is evidence to show that when food is abundant grebes feed only once each day, and the feathered plug would therefore be changed once daily.

In the American Anhinga (*Anhinga anhinga*), a fish-eating bird, there is also a pyloric lobe developed in the stomach. This chamber is better separated from the stomach proper than in the grebes and has an additional peculiarity in the development of many very slender, corneous filaments that project as a brush from the surface around the pyloric opening. These point toward the main cavity of the stomach and are thought to act as strainers that prevent the passage of bones and scales into the intestine until they have been properly digested. With this structure in mind it may be suggested that the feathers filling the pyloric cavity in grebes have a similar function. During digestion this plug serves as a strainer that permits the passage of smaller food particles but catches the larger bones and scales of fishes, and the larger chitinous fragments of crustaceans and insects. The plug is probably disintegrated rapidly, but its place is taken immediately by other feathers that have been eaten meanwhile. The habit would seem to be developed mainly in connection with a diet of fish. It was noted that in the Eared Grebe, a species that feeds extensively upon soft-bodied insects and crustacea and takes few fishes, feather remains often were small in quantity, and at times were wanting entirely. Occasionally, in the cases of the Pied-billed and Holboell grebes, the stomach was filled with a mass of feathers with no food remains present. It is possible that these individuals had had difficulty in securing prey but had continued the feather eating habit to aid in satisfying the cravings of hunger.

Washington, D. C., October 27, 1919.

A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

(Continued from volume XXI, page 230)

PASSING WINGS

EAGER TO SEE the lakes where the Ducks of East Sweetwater went at night, and to find where the Gulls that came over to Sweetwater at night spent their days, I made a circle of six or seven miles out over the harvest fields, discovering four blue lakes among the dumps of glacial drift. Three were rather small, but one was long and attractively irregular in outline, and all were open bordered so that it was possible to see approaching hunters from a distance. The nearest lake, from whose direction many of our Ducks came, was a small round basin sheltered from the wind by low glacial hills and had strips of beach that glowed pink with a low branching plant suggesting coral. A flock of about thirty Canvas-backs and a few other Ducks were already here at half past four, but at sight of my figure on the bank above nervously rose and swung back toward Sweetwater.

Another of the small lakes, besides the Ducks scattered over its surface, had a flock of seventy or eighty Franklin Gulls sitting picturesquely in the middle of its blue water. Sloping up from this lake to the wheat fields was a rough strip of weeds and bushes from which I flushed some young Prairie Chickens, two of which burst away like bombs from almost under my feet. The largest of the four lakes, on which was a goodly number of Ducks, had a long point projecting out into the water which was outlined with Franklin Gulls, probably gathered in ready to fly across to Sweetwater. The harvesters had reported seeing Gulls "catching crickets", and when starting on my round I had discovered a flock hunting over the bundles of wheat. One would fly low over the shocks till, apparently, a cricket or a grasshopper caught its eye, when it would suddenly pounce down upon it. A droll sight it certainly was, to see a Gull, a bird associated with the ocean, in the middle of a harvest field sitting on a shock of wheat catching insects!

On the way home after my tour of the lakes, following for greater ease the hard tracks of the reaper and binder, I crossed prairie billows dotted with shocks of wheat; billow after billow rounding up as far as the eye could see, under the blue sky; until, all landmarks lost, I looked to the sun, pointing the compass in the west. Another type of prairie landscape, another prairie microcosm, these rolling billows with their straw colored sheaves of wheat added to those of the level-topped miles of grain, the cloud-encircling sloughs, and the golden mustard islands.

My tour of the lakes gave me a new understanding of the movements of the masses of waterfowl to and from East Sweetwater. While many flocks of Ducks usually crossed from our lake to the open eastern lakes during the latter part of the afternoon, about the middle of August, on several days that I watched them, the flocks from the west end of our lake gathered along the tules bordering the east bank before flying over. On August 17, at 6:30, there was a wide band of Ducks so closely brown-spotted that from my distance it was impossible to count individuals. Hundreds were there. Many preliminary adjustments were made,

with beautiful mass movements. Some of those in the front ranks would start up, others down the line following, their brown bodies and light underwings catching the western light. Sometimes when the light struck their underparts, the shifting flocks looked almost as white as flocks of Sandpipers in evolution. Flying up over the trees bordering the lake, they would swing around with a wide circuit, settling down again on the water. Once so many rose that the whole surface of the water seemed in motion. And still the flocks of Blue-winged Teal and other Ducks kept coming from the back of the lake to join the restless throng, some flying so low that they were mirrored as they came.

After much shifting back and forth, the black hordes started up over the bank and across the sky toward the eastern lake, winging their way along till finally their black dots disappeared in the sky. As I was watching the shifting formation of the outgoing black hordes, to my surprise, coming in toward the lake passing them, was a white horde of Gulls, as they reached the slanting rays of western light turning one by one to glistening spots in the sky. Flying out over the middle of the lake, they settled down on its surface, presumably for safe shelter for the night.

At 7 o'clock more Ducks crossed over to the east, and again, as the black flock passed out, to my great delight, in came another long trailing white flock of Gulls. At 7:20 a small flock of little Phalaropes came in and lit among the tule islands. At 7:30 mixed flocks of Blackbirds began stringing along to the islands in front of me. By this time the main movements of the Ducks seemed over for the night. Hundreds had flown across to the eastern lakes but hundreds remained along the east side of Sweetwater below the tule border, while others were scattered among the tule islands and the western part of the lake, much as in the day time.

At 7:40 the shocks of wheat lit by the lowering sun sent long shadows across the stubble field. A Night Heron flew over the lake and lit at the edge of a tule island, Gulls called, and the occasional quack of a Mallard was heard. At 7:53 Blackbird notes were heard, and a Song Sparrow sang brightly a number of times, while Barn Swallows came drifting into the tules. At 8 o'clock a few Yellow-headed Blackbirds were flying toward the canes, while another Heron flew across to a tule island, probably to go fishing. The sun was now a yellow ball on the horizon, the surrounding sky a clear red, the lake a satiny gray with soft pink lights and reflected salmon cloudlets. Barn Swallows were still skimming over the water and running through the sky before settling down in the tules, a few Blackbirds were still shifting about, and a few Ducks still swimming around. There was a soft cool breeze, grateful enough after the heat of the day, bringing the sweet smell of the wheat. Above the blue of the horizon there grew a delicate pink afterglow, more pink coming into the water. At 8:09 when the lake seemed settled for the night, a large flock of Franklin Gulls came trooping through the sky, passing on in the direction of the main Sweetwater lakes to the west.

The next night was cloudy, with a hard south wind blowing, and the Ducks hurried across to the eastern lakes to get settled for the night in the protection of the hills. As early as six o'clock the sky over the lake was astir with Ducks, Gulls, and Black Terns, the Terns flying about over the surface, dipping down as if to pick off insects as they went. The most notable sights were a beautiful flock of Gulls that came in at seven o'clock, glistening white spots against the dark woods at the south end of the lake, and at 7:45 a flock of two or three hun-

dred more straggling in from the east, a rare sight illumined by the setting sun. Another night at 7:12, a Crow cawed, there was a roar, and up rose a black horde of Redwings and Yellow-headed Blackbirds. Before going far the flock split, part going west to the canes, part east to a willow, a black mass entering it.

During the days when the hordes of Ducks and Gulls were moving back and forth between their feeding grounds and their sleeping grounds, migrating flocks of Bank Swallows stopped off with us on their southward journey. The first of August a flock of five or six hundred took possession of a section of telephone wire over the wheat fields, looking like beads on a string, and in flying down, as when a Hawk passed, looking like swarms of insects over the wheat. At first they kept to the wires over the fields, but afterwards came up to the wires near the farm house where they could roost in the trees if they chose.

Once a dead cottonwood was all a-flutter with them, more a-flutter than when the wind had rustled its leaves; for with balancing wings they were trying to light on the sides of the upright twigs. Going over to the large living poplar trees, they fairly swarmed about the green tops. When on the wires near the house, at the slightest disturbance they would fly down over the road and grain field. At a loud twitter of alarm from one voice, nearly all dropped from the wires, but when nothing happened, back they flew again.

In the hottest parts of the August days some took sunbaths on the wires, striking amusing attitudes, tilting up one wing so the lining showed and spreading the tail till it made a grayish fan in the sun; or spreading both wings and tail and holding them out for the sun to beat down on. But the strangest thing they did was to lie down on the road. Some lay as if dead, looking like specimens in a museum case, except that their backs were up. Power through Repose might well be their motto! Were they tired young, recently projected from their stable nesting holes in the bank and finding the need of Rhythm in Life? For even a Swallow cannot always be on the wing or on a vibrating telephone wire. Some, instead of lying prone, sat up and picked about; others, apparently fluffy breasted young, took sunbaths lying on one side, showing the light breast and the underside of the wing as it tilted up sharp pointedly. One lay with both wings up. They seemed to want the sun to sift down through their feathers and under their wings, but only one that I saw gave any suggestion of trying to dust. When a ground squirrel, ignoring their presence, trotted down the road most of them rose, though a few on the far wagon track stayed where they were. Among the large flocks of Bank Swallows I recognized one Barn, one Eave, and I thought one White-bellied Swallow. Some of the flock in the early afternoons were seen sweeping over the smooth white face of the water.

While the Swallows were still with us, the August heat culminated in a cyclonic disturbance. The Norwegian farmer's wife at the north side of the house was watching a strange dark gray cloud that, as she said afterwards, started big at the top and circled and kept circling till it got small at the bottom, near the earth "like a tahsel cap". At this point a commercial traveler drove up to the house and looking north demanded, "What's that cloud?" exclaiming after a second look, "That's a cyclone cloud!" Just then a black whirl of dust suddenly swept out over the grain fields. The men in the hayfield seeing it coming drove behind a large hay stack and fortunately, although many stacks were torn apart and scattered over the field, theirs escaped. When the wind had passed

we looked down at the lake, usually so quiet, and saw white spray blowing from the surface of the roughened water out onto the bank above. To the south of us, we heard later, buildings were blown down and people killed by the cyclone. Big thunder heads, an electric storm, and a rainbow followed, and the next morning it was cooler. As my notes record, there was "a cool perfect day with west wind and a wonderful sunset."

Where the Swallows were during the storm I do not know, but at seven o'clock that night, as if nothing had happened, they were flying from the lake across the wheat field to the telegraph wires in front of a deserted cabin. By this time the flock had increased in size from five or six hundred to between nine hundred and a thousand. They fairly swarmed around the house, lighting on the ridgepole and the chimney and then dropping off and flying over to the wires. The late comers had to fly along the line looking for a vacant seat. If a row was sitting close, the seated birds objected to the efforts of the newcomers, perhaps not liking to have their balance disturbed; so, after flying along the most closely packed wires, they had to go on to the more openly spaced. After laboriously getting settled, at a word, those on a long length of wire would break away and have it all to do over again.

Finally, to my surprise, a large section suddenly dropped from the wires and flying toward the lake crossed high over the wheat field, the sky fairly twinkling, sparkling, as their white fronts caught the light. Then they pitched down over the lake and I realized with a thrill that this great migrating flock, nearly a thousand strong, was going to roost in the tules, a sight that, for years, I had been longing to witness. What a perfect hour they celebrated! No trace of the cyclonic disturbance was left. The woods at the foot of the lake, yellowed and enriched with shadows by the sinking sun, were mirrored in the quiet water. The tule islands—long thin streaks of tule—were imaged in the lake whose opaque surface was almost opalescent with the reflections of soft cloudlets. Glancing back at the wires I saw another section left bare, a large flock breaking away and sweeping low over the surface of the water, glinting white as they went. Swarming over the tule islands, fluttering over the dark pointed stems and settling down among them, when I supposed they were quiet in their roost, they swarmed up again, going on to other islands out in the sunset. By 7:20 the wires were deserted and the flock apparently quiet for the night, though the harvester was still heard in the wheat field, and not until after our belated supper did the shocks of wheat around the farm-house lose the soft pink of the afterglow.

The next morning at eight o'clock when the shore was resounding with the notes of young Black Terns, and large flocks of Ducks from the open lakes were coming back and lighting down, the surface of the lake was alive with Swallows, and some were flying back to the wires; but in the afternoon when a strong east wind was blowing up rain, none were to be seen; they had doubtless started off on another stage of their long journey. This was the fourth of August. On the sixth, when no Swallows had been seen for a day, a flock of five or six hundred appeared on the wires by the farmhouse, another invoice from the north, as I imagined.

Covering two wires between poles they sat facing the north wind, in places sitting so close together that the borders of their tails made a regular pattern. The next night at 7:10, when two hundred and fifty or three hundred were on

the wires, part of them broke away; but instead of flying toward the lake as I expected them to do, flew up in the sky, flashing white and going higher and higher until, before my enraptured gaze, they actually went up out of sight in the blue! The next division of the flock flew about erratically at first, but calls as of command from above apparently drew them together and they too rose higher and higher till they went out of sight in the sky, leaving me thrilled and awed by this translation of a winged host.

During the short interval between the visits of the two great flocks of Bank Swallows—on August 4—a flock of migrating Wilson Phalaropes appeared on the lake. On my way home from the cove of the Ruddies, I had just looked back at the western shore where a glittering sunpath was starting across the water. when out on the lake my attention was arrested by a compact flock of small Snipe-like birds that came swinging in to alight on the smooth glistening water. Their slender necks, nodding heads, and their quick nervous manner of turning from side to side to pick insects from the surface proclaimed them Phalaropes, and I welcomed them with peculiar delight after my experiences on Phalarope Slough during the summer. Perhaps my friends were among them! In any case, it seemed a rare privilege to be visited by a migrating flock of the exquisite birds. The water appeared covered with them. Overhead white-breasted Gulls wandered about, and twittering Swallows came out of the blue sky, while on lake and in sky the scenes were being shifted for the last act—the beautiful close of the day, well fitted to celebrate the coming of these spirit-like wanderers.

Two days afterwards, late in the afternoon, I found the quiet surface of the lake alive with them. Looking across the water I could place them by dots heading short hair-line wakes. From one spot I counted fifty of them, and that was only a fraction of their numbers. They rode like miniature Franklin Gulls, with wings tight at their sides and tails up, while their long-billed heads nodded and picked to right and left. Though generally feeding from the surface one would sometimes give a quick jab so deep below that its tail tipped up. When they rose and flew, they made a close flock with white retreating spindles, and wheeling, went on with swift aerial evolutions till I stood amazed. For how do they get their training? Who calls "Fall in?" Who drills their troop to acquire such perfect efficiency?

As they re-lit, their long wings pointed forward a second in beautiful pose. Sometimes a pretty picture was caught as a delicately modelled head and neck was reflected in the still water. Before sunset the lake presented a beautiful water color in soft gray and silver. On the gray water of the east side of the lake, each Phalarope's wake had a silvery sheen; between the tule islands were long silvery lines, while beyond, the main body of the lake was a sheet of silver; and away at the end of the field of vision, soft gray cloud lay along the horizon. Over this rarely beautiful water color, softly tinted Gulls flew about, harmonizing, bringing together all the delicate elements of the picture.

The next morning at eight o'clock when Swallows and Black Terns were skimming over the surface of the lake and large flocks of Ducks were coming in from the east, the white bodied Phalaropes were down at the south end of the lake, showing well in the dark reflections of the trees. At six o'clock that night over three hundred of the little creatures were gathered in the same place, suggesting close set pins in the smooth water, small flocks of them at times rising and swinging around in beautiful white-flashing formation.

Although this was the largest number of Phalaropes observed, smaller flocks were noted on the lake for about ten days, seventy or more being found in the cove of the Ruddies the middle of August. A small band was discovered one afternoon when the lake was lovely with the reflection of blue sky and creamy clouds, the spirit-like Phalaropes swimming around among the mirrored clouds.

So many rare pictures were exhibited in this lake region, alive with waterfowl and with its swift alternation of sun and cloud, its broad mirror and its resplendent sunsets whose canvas hung to the level prairie horizon, that it was difficult to say which was the most beautiful; but two striking pictures stand out from among them. One was of a sunset when, with a clear sky above, three great thunder head masses of creamy cloud stood out on the horizon—northeast, east, and southeast. One mass with concave, shell-like salmon and pink interior suggested the Flight from Pompeii, the robe drawn protectingly high above the heads of the tender fleers. While no storm came from the thunder heads, lightning played over their salmon surfaces, and the sunset as it grew, painted them with delicate tints of cyanic pink and blue.

In the other sunset, the west showed the clear red tone which is a familiar home-like background; but in the east, horizontal parallel lines of gray blue cloud carried the mind far out over the ocean. Then gradually the warm tones spread from the west by roseate slanting scorings till, growing rich and ragged, the color passed on, softly permeating the gray blue of the east, producing exquisite color harmonies on the face of this cloud-born ocean.

(*To be continued*)

NOTES ON THE LIMICOLAE OF SOUTHERN BRITISH COLUMBIA

By ALLAN BROOKS

THESE NOTES were inspired by Mr. J. H. Bowles' paper on "The Limicolae of the State of Washington" (*Auk*, vol. xxxv, 1918, pp. 326-333). No group of birds has been so neglected by the ornithologists of the western states prior to the last ten years or so, and the paper cited is the best evidence of the increase of interest in these fascinating birds.

In the notable work on "The Game Birds of California", recently published, the authors deal in full with all the shorebirds known to occur in that state; and the impression to be gathered is that they consider the state to have been fairly exhaustively worked. With all deference, it would seem to the present writer that a great deal of work is still needed to bring the records of the Limicolae up to anything like the standard of those of the birds in all the other orders. If a few collectors and observers of the caliber of Mr. R. H. Beck could work the coast-line and inland waters of California as Beck worked the waters off Monterey, not only would a number of species now considered scarce be proved to be of regular occurrence, but several species would be added to the state list, and in all probability stragglers from Asia would add species to the North American list.

Of the species to be added to the Californian list the Semipalmated, Stilt,

Eastern Solitary and Buff-breasted sandpipers are all bound to occur, and only need looking for; while the Aleutian and Sharp-tailed sandpipers, and Asiatic Golden Plover, which have been taken frequently along the coast to the northward, might also be expected.

As to the many stragglers which might drift over from Asia, one has only to compare the lists of those now known to occur on the Atlantic and Pacific seaboards to see the possibilities. On the Atlantic a large percentage of the Old World species has occurred; even such a bird as the Ruff, which does not go far to the north, has occurred more than once. On the Pacific, despite the fact that a large number of species of Asiatic shorebirds are not only of regular occurrence in Alaska, but in many cases have bred there, comparatively few extralimitals have been recorded farther south. Many of these Asiatic-Alaskan species must straggle down the American coast every year, while others that breed in Siberia may easily make a similar mistake. Of the latter, such species as the Thick-billed, Broad-billed, Temminck, and Terek sandpipers, Least Curlew, and many others may at any time be expected to turn up on the American coast, as well as many of the species that have already made the trip across the North Atlantic.

An important factor which has helped to establish the long list of extralimitals on the Atlantic coast is the shorebird shooter with his decoys. On the Pacific, except in a few localities, shorebirds with the exception of Wilson Snipe, are not considered game birds; and while I hope this condition will always continue to exist, chances to make new records are greatly diminished in consequence.

Too few ornithologists have really grasped the situation that obtains among the far northern-breeding shorebirds, caused by their amazing migratory instinct. While most birds are still busy with their nesting duties or comfortably molting into their fall dress, Limicolae from thousands of miles to the northward are driving through on their way to the Southern Hemisphere. July is the best month for them in southern British Columbia; by the middle of August the majority have passed. Dr. L. B. Bishop, writing to me of the conditions in the Dakota region, considered that by the end of *June* the majority of the adults of a number of species breeding far to the north had passed south. It is very hard to reconcile such facts with the conditions the birds have to contend with in the Arctic.

I think this early southward movement accounts for the fact that so many species are overlooked. The collector at that time, if collecting along the shore at all, is busy with the juvenal plumages of the marsh-breeding birds, and the silence is frequently broken by the little crack of his "aux". Now this will not suit the highly nervous Sandpipers just in from a three hundred mile flight, and at the first crack they are off—to add another few hundred miles to their southward journey. Shorebirds must be especially looked for, and looked for continuously. The accepted theory is that they travel at night, but my experience, which I hesitate to record, is that the bulk of the migration of these birds is by day, from soon after daylight to some time in mid-afternoon, just the period that most collectors are out. The birds are then high overhead, and what should be looked for is the sudden change of wind (they travel with a beam wind) or a big storm which drives them down to localities they are not usually found in. Such chances as these may occur only once in a season—or in years.

Added to this, the whole family seems to suffer from "nerves" to an extent not found in any other class of birds; the little chaps that trot around your feet one day, are quite unapproachable the next, and all this means a lot of patience in the man who would study them. To the bird observer who does not collect, their identification is attended with many difficulties. Even with species that I am very familiar with I find myself making frequent mistakes after a good observation of the bird through an eight-power glass. Size is the most deceptive thing, especially on a smooth beach or mudflat; several times I have been quite positive of the identity of one of the Yellow-legs only to find on taking the bird that it was the other species. Similarities that are patent in the cabinet, are not nearly as evident in the field, and many peculiarities of pattern that are conspicuous in life, disappear when the bird is in the hand.

So, however averse one is to taking life, the only positive record in most cases entails the taking of the bird. The following incident will illustrate how easy it is to make errors.

A few years ago, one day in early July, I saw, on the shore of a little pond in Okanagan, an adult Least Sandpiper closely followed by a downy young a few days old. The actual parent of this was making a small demonstration on the opposite shore a hundred yards away. Yet how easily this might have been taken for a conclusive record of the breeding of the Least Sandpiper in this locality.

In my own observations I have always been handicapped by not being in a really good locality, or else too far away from the best grounds. To get good results one should almost live on the ground. The ideal place for rare records is not the large extent of mud flats or shore, but a limited area presenting good feed possibilities on an otherwise unsuitable stretch of coast-line. Such a place can be intensively worked.

Here in Okanagan the conditions are not at all favorable, being limited to a few hundred yards of too-clean shore, and some alkaline ponds at about 1000 feet higher elevation. Yet this district has yielded some twenty-four species, some of which have not been taken in any of the states west of the Rocky Mountains. The following list is intended to be considered in conjunction with Mr. Bowles' excellent list of the Washington Limicolae.

I have added a synopsis of the colors of the bills and feet in fresh specimens, collected from the labels of the skins in my collection. This is intended to supplement those given in "The Game Birds of California", the authors of which have had to go back as far as Audubon for their information in many cases, and in some cases Audubon has evidently guessed at the colors from the dried specimens. The color of the iris is not added except in a few instances, this being almost invariably very dark brown.

1. **Phalaropus fulicarius.** Red Phalarope. A few coastwise records.

2. **Lobipes lobatus.** Northern Phalarope. Common in the fall and regular migrant. Scarcer in the spring. First fall records, adults, July 15; young, August 8. Bill black; feet gray, livid bluish on inner surface, webs cream color.

3. **Steganopus tricolor.** Wilson Phalarope. Two sight records only.

4. **Recurvirostra americana.** Avocet. A small flock at Okanagan Landing April 28, 1908. Five taken. Iris brown; bill black; feet pale leaden blue.

5. **Gallinago delicata.** Wilson Snipe. Common and breeding throughout the Province in suitable localities. A few winter even in the cold interior.

6. **Macrorhamphus griseus scolopaceus.** Long-billed Dowitcher. Common fall migrant at the coast; scarce in the interior. Rare in spring. Some summer adults have

a conspicuously white central area on the abdomen, but the bills are always slightly longer than the only eastern specimen I have of *M. griseus griseus*, so all are classed as *scolopaceus*. Earliest fall records, adults, July 26; young, August 22. Bill dark olive on basal half; feet greenish, to grayish olive.

7. **Micropalama himantopus.** Stilt Sandpiper. Since my first record of two birds taken at Sumas August 19, 1899, there have been four more records, all at Okanagan Landing; so it may prove to be a regular migrant. Earliest fall record August 8. No adults seen. Bill olive, tip black; feet varying from Roman ochre to yellow ochre, tinged with green.

8. **Tringa canutus.** Knot. This is evidently a coastwise migrant. One record some 100 miles inland—Sumas, August 15, 1890. Bill olive, tip black; feet yellowish.

9. **Arquatella maritima couesi.** Aleutian Sandpiper. The first records of this species were of specimens taken near Massett, Queen Charlotte Islands, by Mr. C. deB. Green in April, 1914. Since then it has been taken many times far to the south of that place (Washington and Oregon); it is probably a regular winter resident along the rocky shores of the coast, and only needs looking for in such localities. Latest spring record for Massett, May 5. Feet olive greenish.

10. **Pisobia aurita.** Sharp-tailed Sandpiper. Two specimens taken at Massett, Queen Charlotte Islands, December 27, 1897, by Rev. J. H. Keen (Provincial Museum Catalogue). One of these which I examined was, curiously, an adult. This would indicate a regular migration down the American coast, as adults rarely lose their bearings. One seen by myself at the mouth of Campbell River, October 4, 1903, was a bird of the year.

11. **Pisobia maculata.** Pectoral Sandpiper. Bowles in *The Auk* (1918, p. 329), gives this species as a tolerably regular and sometimes common fall migrant to the tide-flats and fresh-water marshes in the vicinity of Tacoma. I have derived great comfort from this record as it has always been a source of wonderment to me where the great numbers of this species that I have seen migrating across the 49th Parallel could disappear to. Everywhere just north of that boundary I have found it to be a common and sometimes abundant visitor every fall for the last thirty odd years, though rarer in the spring, and so recorded it in my list of the birds of Chilliwack (*Auk*, January, 1917). In spite of the above records the authors of "The Game Birds of California" say definitely that "the main migration route of the species lies east of the Rocky Mountains and it seems that only a few stragglers, probably birds of the year, occur along the Pacific Coast." See also the A. O. U. Check-list for 1910: "Rare on Pacific coast south of British Columbia, *except in Lower California*" (italics are mine). Earliest fall records, adults, July 28; young, August 7; last spring record, May 22. A curious record, which I hesitated to place as a fall one, is of three adults taken at Sumas, June 14, 1899. Bill dark olive, yellowish at base of lower mandible; feet bright ochre yellow.

12. **Pisobia bairdi.** Baird Sandpiper. This is another species, a common, even abundant, fall migrant throughout southern B. C., that used to do the disappearing act on the 49th Parallel until a few years ago, when it commenced to be recorded regularly to the southward. Though I have seen thousands in the fall, I have only two spring records, and only one record of an adult in the fall. Earliest fall records, adults July 7, young July 26. Bill black; feet dark gray to black.

13. **Pisobia minutilla.** Least Sandpiper. Abundant in the fall, and regular in the spring. Earliest fall records, adults, July 7; young, July 24. Bill dark olive to black; feet dull, to bright, ochre yellow, sometimes tinged with green.

14. **Pelidna alpina sakhalina.** Red-backed Sandpiper. Abundant in the fall and much scarcer in the spring, at Sumas; resident throughout the winter on the coast, no interior records. A very late arrival in the fall; I cannot find any earlier record than October 14. Bill black, feet dark gray to black. I must withdraw my record of *Pelidna alpina alpina* (*Auk*, vol. xxi, p. 290). Dr. Bishop has identified the specimen in question as a small individual of *P. a. sakhalina.* It was identified as *alpina* on the measurements, which are well within those given for the Old World form in Ridgway's *Manual.*

15. **Ereunetes pusillus.** Semipalmated Sandpiper. While this species is tolerably common west of the Cascades on the coast, it becomes common, and at times abundant, east of the Cascade range during the fall migrations. It is another of the

"vanishing species" as far as the western states are concerned, as while I have seen hundreds within a few miles of the International Boundary, it apparently ceases to exist once it leaves British Columbia. If the keen-eyed observers of the States to the southward will look over the flocks of the next species I think this mystery will be solved. Even in life it is very distinct; the short black bill has none of the downward deflection seen in *Ereunetes mauri*, and the back is always grayer. The post-nuptial molt commences much earlier than in other sandpipers. The adults, which form the vanguard of the fall migration, are in nearly complete winter plumage on their arrival here. One taken at Okanagan on July 7 has already acquired most of its gray winter dress. Earliest fall records, adults, July 7; young, July 15. Bill black; feet in adult dark gray to black; in young usually dark gray, sometimes tinged with yellowish, and in some cases greenish gray, bright olive green on front of tarsi.

16. **Ereunetes mauri.** Western Sandpiper. West of the Cascades this sandpiper is abundant in fall and much scarcer in spring. East of that range I have only three records, all in the fall. It does not form one percent of the flocks of *Ereunetes* that pass down the Okanagan Valley every autumn. It seems to be decidedly later; earliest fall record, adults, July 24; young, August 3. Bill black; feet grayish black.

17. **Calidris leucophaea.** Sanderling. Common along the coast; scarce in the interior. Earliest fall record, adult, July 25; young, August 15; late record, November 2 (at Comox). Bill and feet black.

18. **Limosa fedoa.** Marbled Godwit. Almost exclusively confined to the coast. One inland record, Okanagan, August 7, 1910.

19. **Totanus melanoleucus.** Greater Yellow-legs. Common in spring and fall, and breeding in the interior at least as far south as Clinton. Earliest fall record for Okanagan, adults, June 22; young, July 11. Bill olive, black on terminal third; feet yellow, varying from bright ochre yellow and dull maize yellow, to medium cadmium. The inner edge of the primaries is occasionally freckled as in *Helodromas solitarius cinnamomeus*, in one adult even more so.

20. **Totanus flavipes.** Lesser Yellow-legs. Common in fall, scarcer in spring. Earliest fall record, adults, July 9; young, July 26. Soft parts as in *Totanus melanoleucus*.

21. **Helodromas solitarius solitarius.** Solitary Sandpiper. Noted regularly on fall migrations both east and west of the Cascades for the last twenty years. Identification corroborated by Mr. Brewster. The proportion to the western subspecies is as two to five, only those specimens having all the characteristics of the eastern subspecies being classed as *H. s. solitarius*. Earliest fall records, adults, August 10; young, August 5. Bill olive green, tip black; feet pale olive green, in young birds sometimes yellow ochre slightly tinged with green.

22. **Helodromas solitarius cinnamomeus.** Western Solitary Sandpiper. Common in the fall, very much scarcer in spring, throughout southern British Columbia. I have not found it breeding south of lat. 53°. The deep buff spotting of the upperparts is confined to the young birds in first plumage. In these it is probably the best distinction from the eastern subspecies, as the other characters, freckling of inside web of the primaries and absence of the loral stripe, are not constant. The adult in full spring plumage has the spots white, exactly as in the eastern subspecies; in newly molted fall plumage these are obscure and brownish. In all adults that I have, the freckling of the inside web of the primaries is constant, and the size is consistently larger when birds are compared with the same sex of the eastern subspecies. Earliest fall records for Okanagan, adults, July 7; young, July 19. Color of soft parts as in *H. solitarius solitarius*.

23. **Catoptrophorus semipalmatus inornatus.** Western Willet. One specimen shot at Clover Point near Victoria, August 18, 1898, by Mr. J. Henley (Provincial Museum Catalogue).

24. **Heteractitis incana.** Wandering Tattler. Absolutely confined to the coast line during migrations. Earliest fall records, adults, July 26; young, September 20. Bill blackish olive; feet dull ochre to deep ochre yellow.

25. **Bartramia longicauda.** Upland Plover. This year I found the Upland Plover breeding just west of the Rockies at New-Gate, B. C. (Gateway, Montana); one specimen taken May 30, 1919. It probably breeds sparingly some distance farther west,

as I have heard of its eggs being taken just east of Osoyoos Lake (Mr. C. deB. Green). There are records for migrations from Vancouver Island to the Cariboo district, at various points. Eyelid yellow; bill black on culmen and tip, rest of bill and gape lemon yellow; feet normally pale wax yellow, claws black; in one specimen the feet are pale ochre tinged with flesh color.

26. **Tryngites subruficollis.** Buff-breasted Sandpiper. West of the Cascades, at Sumas, I used to see this sandpiper almost every fall; east of the Cascades, at Okanagan, in much more suitable country, I have not yet seen it. Earliest fall record (young only), August 7. Bill black; feet bright ochre yellow.

27. **Actitis macularia.** Spotted Sandpiper. Summer resident throughout the Province. Bill in adult varying (in individuals) from yellow ochre to pale orange; culmen in winter tinged with dusky, tip at all times black. Feet varying from flesh color to dull greenish yellow. Young, upper mandible grayish olive, lower fleshy gray, tip dusky; feet pale greenish ochre, sometimes grayish flesh color tinged with yellowish.

28. **Numenius americanus.** Long-billed Curlew. Summer resident in open semi-arid areas in the interior as far north as 150-mile House. A scarce transient on the coast. No legislation will save this fine bird, as the bringing under cultivation of its nesting grounds is gradually causing its extermination. The favorite nesting site is a summer fallow, and the eggs are destroyed by the cultivator. The great increase of crows is also a serious factor; these get the eggs and young, and in some districts, where the nesting grounds are still all natural range pasture, these pests have all but exterminated the curlews. Bill in adults dusky brownish, flesh colored on basal half of lower mandible; feet dirty leaden blue. In the young the colors are purer, the basal half of lower mandible being clear purplish pink, the feet clear leaden blue.

29. **Numenius hudsonicus.** Hudsonian Curlew. Common on migrations along coast line; not yet recorded inland. Colors of soft parts as in *Numenius americanus*, the feet averaging duller and grayer.

30. **Squatarola squatarola.** Black-bellied Plover. Common migrant, scarcer inland. Fall records (earliest), adults, August 12; young, August 24. Bill black; feet dark blackish gray.

31. **Charadrius dominicus dominicus.** American Golden Plover. Tolerably common and regular fall migrant; very scarce in the spring, when I have only three records. At Sumas Lake, a few miles north of the Washington boundary, it is especially common in September and October, although I have seen large flocks as far east as the base of the Rocky Mountains at the source of the Columbia River. In the west it seems to be a bird of the mudflats, not of grassy prairies. Earliest fall record, August 19. Bill black; feet dark slate gray.

32. **Charadrius dominicus fulvus.** Pacific Golden Plover. I still have one of the four birds that I took on the 2nd, 3rd and 4th of November, 1903, at Comox, Vancouver Island. It is quite typical of the Asiatic bird in its bright golden plumage, buffy undersurface tinged with yellow, and long tarsi. Measurements, in millimeters, ♀, wing 163, culmen 23, tarsus 44, middle toe with claw 29. Bill black, feet slate gray.

33. **Oxyechus vociferus.** Killdeer. Common resident throughout southern British Columbia. A few remain all winter even in the interior, but are usually driven south, or succumb to the cold. Eyelid scarlet vermilion, more orange in young birds; bill black; feet livid flesh color tinged with bluish; claws dusky.

34. **AEgialitis semipalmata.** Semipalmated Plover. Migrant, not common; coast and interior, breeding as far south at least as the north end of Graham Island, where Mr. C. deB. Green has taken several sets of the handsome eggs. Earliest fall records for southern B. C., adults, July 24; young, August 12. Eyelids yellow in adult and young; bill in adult dull orange on basal half, tip black; in young the orange is abruptly confined to base of lower mandible; anterior aspect of foot and tarsus ochre yellow, posterior orange yellow, claws black.

35. **Aphriza virgata.** Surf-bird. Migrant and possible winter resident on the coast. Earliest fall records, adults, July 24; young, September 2. Bill black or dark blackish olive in adult, base of lower mandible dull orange; feet light olive, sometimes strongly yellowish. Young with bill dark olive, tip black; feet yellowish.

36. **Arenaria interpres morinella.** Ruddy Turnstone. Migrant along the coastline, very much scarcer than the Black Turnstone. One record for Sumas Lake, Aug-

ust 19, 1899, a young bird. Bill grayish olive on basal half, tip black; feet orange, the joints of toes and tarsi often tinged with dusky, claws dull blackish.

37. **Arenaria melanocephala.** Black Turnstone. Common winter resident; absolutely confined to the sea-coast. Earliest fall records, adults, July 24; young, September 2. Bill black; feet dull reddish in adult, brighter on soles and back of tarsi; in young duller and browner throughout; claws black.

38. **Haematopus bachmani.** Black Oystercatcher. Common resident in suitable localities on the coast. Iris yellow; eyelids vermilion; bill vermilion, tip paler; feet pale whitish flesh color; claws dusky. Downy young, iris brown; bill dark gray, dull orange at gape; feet pale gray.

Okanagan Landing, British Columbia, August 18, 1919.

EDWARD GARNER, A PIONEER NATURALIST

By HAROLD C. BRYANT

ALTHOUGH well known only locally, Edward Garner of Quincy, California, was one of the pioneer naturalists of California and must be numbered among the early ornithologists of the state. He was born in England, near London, in 1846, and came to the United States in 1869, settling at Newark, New Jersey. He started for California in 1875, taking in the Centennial Exposition at Philadelphia but came only as far west as Nevada, where he remained for two years, and in which state he cast his first vote as an American citizen. In 1877 he moved to Quincy, Plumas County, California, where he finally settled.

Mr. Garner showed an early interest in natural history, especially entomology, and in 1867, while still in England, he secured an old English work on taxidermy, by Captain Thomas Brown, entitled "The Taxidermist's Manual or The Art of Collecting, Preparing and Preserving Objects of Natural History" (20th ed., A. Fullerton & Co., London, pp. xii+150, 6 pls., 2 figs. in text). With this at hand, about 1878, he began mounting specimens of birds and mammals, devoting only spare time when not engaged in his trade as a painter.

In 1885 his first collection of mounted specimens of birds was sold to the manager of the Plumas House in Quincy, the local hotel, for $200. Some of these specimens are still to be seen in a glass case in the hotel. With this money Mr. Garner went to San Francisco to take some lessons in taxidermy. Here he met the senior Lorquin, a well-known taxidermist. However, Mr. Garner proved himself already so proficient in taxidermy that, instead of taking a set of lessons, he learned Lorquin's methods simply by watching him while at work. Mr. Garner asserts that what was learned at this time was later discarded for his original methods of procedure.

On his return to Quincy, Mr. Garner began in earnest to build up his private collection. Most of his specimens were acquired during the nineties and consequently now have historical value. In 1915 Plumas County purchased almost the whole of the Garner collection of birds and displayed it at the Panama-Pacific International Exposition. Since the Exposition, it has been on display at the Quincy High School. A few specimens have been donated to Leland Stanford Junior University.

A large entomological collection, containing much foreign material obtained in exchange, and a large collection of mounted deer heads, most of which have long been on display in the Buckhorn Brewery, in Quincy, also testify to the skill and patient endeavor of this naturalist.

Inspection of the collection at the Quincy High School made on May 31, 1919, showed a number of rare birds, the existence of which should be made known by publishing the records. Each bird is well mounted and the exact data are written on the under side of the mount. In a few instances data here given were completed by an examination of the carefully kept notebooks of Mr. Garner. Of particular note are the following specimens:

Lophodytes cucullatus. Hooded Merganser. Female. Prattville, California, January 4, 1898. Two male specimens taken in Plumas County are also in the collection.

Scotiaptex nebulosa nebulosa. Great Gray Owl. Female. Quincy, California, May 12, 1894. Mr. Garner states that in addition to this specimen two others were taken at about the same time. One was mounted and displayed for many years in the Plumas House, the local hotel, and the other, mounted along with a Pigmy Owl, was sold to a local resident. All three specimens were taken in the same general locality near Quincy.

Cryptoglaux acadica. Saw-whet Owl. Male. Quincy, California, December 2, 1889.

Otus flammeolus. Flammulated Screech Owl. Quincy, California, 1907.

Sayornis sayus. Say Phoebe. Male. Quincy, California, March 25, 1897. Female, Quincy, California, March 24, 1897.

Bombycilla garrula. Bohemian Waxwing. Male. Quincy, California, January 25, 1890. Mr. Garner states that eight specimens were taken on the same date in an apple orchard. McGregor (Condor, II, 1900, p. 34) records a specimen in the collection at Stanford University taken by Garner in 1892.

Among the study skins are to be found:

Coturnicops noveboracensis. Yellow Rail. Female. Quincy, California, April 24, 1889. Male. Quincy, California, April 16, 1889.

Astur atricapillus striatulus. Western Goshawk. Male. Meadow Valley, Plumas County, California, May 5, 1899.

Two interesting albinos are in the collection, one a Mountain Quail taken in Indian Valley by Kenneth Murray, October 4, 1907, and the other a pure white Sparrow Hawk taken on the J. W. Thompson (Illinois) Ranch, near Quincy.

Berkeley, California, October 7, 1919.

DESCRIPTION OF A NEW *OTOCORIS* FROM CALIFORNIA

By HARRY C. OBERHOLSER

THE determination of the breeding Horned Lark of the northern Sierra Nevada has always been a puzzling question. The present writer tentatively referred birds from Summit, California, and Bald Mountain, Shasta County, California, to *Otocoris alpestris merrilli* (Proc. U. S. Nat. Mus., xxiv, June 9, 1902, pp. 835-836), but this identification was even at the time unsatisfactory, since they really much more closely resemble *Otocoris alpestris strigata*. Additional material recently studied shows that these birds represent a new race of *Otocoris alpestris*, which we propose to call

Otocoris alpestris sierrae, subsp. nov.

Chars. subsp.—Similar to *Otocoris alpestris actia*, but upper parts darker; nape more cinnamomeous; back more blackish and more contrasted with neck; and posterior lower parts usually decidedly tinged with yellow.

Description.—Type, adult male, no. 203534, U. S. Nat. Mus., Biological Survey collection; head of Pine Creek, Lassen County, California, June 13, 1906; A. S. Bunnell. Forehead and broad superciliary stripe, dull white, the former slightly washed with yellowish; crown and horns black; occiput and cervix between pecan brown and tawny, the former slightly darker; back and rump between mummy brown and fuscous, the feathers edged with sayal brown, cinnamon, and dull pinkish buff; shorter upper tail-coverts like the cervix, the long feathers cinnamon, their centers dark olive brown; middle tail-feathers dull wood brown, their central portions dark olive brown; remainder of tail dull black, the outer edge of the terminal part of the outer web of the outer pair of rectrices dull white; wings grayish olive brown, the inner edges of the secondaries brownish white, the outer vanes of the quills margined with cinnamon and dull pinkish buff, the exposed surface of the lesser and median wing-coverts, together with the outer edge of the greater coverts, like the cervix, but paler; a small spot behind each eye yellowish white; lores, and broad subocular stripe extended upward across the anterior portion of the auriculars and also downward below the auriculars, black; middle portion of the auriculars yellowish white, the posterior part becoming olivaceous; chin and throat, colonial buff, this color posteriorly paler and spreading up behind the auriculars; sides of neck and of breast like the cervix; broad jugular crescent black; rest of lower parts dull white, the abdomen cartridge buff, the breast washed with colonial buff and flecked with the color of the cervix, and the sides sayal brown streaked with the color of the cervix; thighs sayal brown; lining of wing white.

Measurements.—Male (eight specimens, from California): Wing, 94.5-105 (average, 100.3) mm.; tail, 65-72 (68.3); exposed culmen, 10-12.2 (11.1); tarsus, 20-22.5 (21.3); middle toe without claw, 11-12.2 (11.7).

Female (three specimens, from California): Wing, 89-95 (average, 92.7) mm.; tail, 64-68 (66); exposed culmen, 9.5-11 (10.2); tarsus, 20-21 (20.3); middle toe without claw, 11.2-11.5 (11.3).

Geographic distribution.—Breeds in the region of the Sierra Nevada in California, south to Placer County and north to Lassen County. Winters also in the Sacramento Valley.

Remarks.—This new race differs from *Otocoris alpestris rubea*, the range of which it approaches on the west, in its darker upper parts, more pinkish nape, which is more contrasted with the back, and in its more yellowish lower surface. It is smaller than *Otocoris alpestris merrilli*, and in the male has the nape much darker, more cinnamomeous or ruddy, the upper parts much more tawny or rufescent, and the lower parts much more yellowish posteriorly. It is similar to *Otocoris alpestris insularis*, but is somewhat larger, and in the male is slightly more tawny above, although very close in the general color, and on the lower parts is more yellowish on the posterior portion. Also in fresh plumage it has less dusky spotting on the breast. In general appearance it is very much like *Otocoris alpestris strigata*, but is somewhat larger, with a rather

smaller bill, and in the male has the nape darker, more cinnamomeous, the other upper parts more ochraceous, less grayish, and somewhat darker, as well as the yellow of the lower parts of a more buffy shade. The female, too, has the upper parts darker, more ochraceous tawny, and the yellow below more buffy than the same sex of *Otocoris alpestris strigata.* In fact, this Sierra Nevada race looks really most like *Otocoris alpestris strigata,* from the breeding range of which, however, *Otocoris alpestris merrilli* completely isolates it in northern California and southern Oregon. Since *Otocoris alpestris sierrae* and *Otocoris alpestris strigata* are so much alike, some California winter individuals of the former have doubtless passed as the latter, but specimens recorded by the writer from Red Bluff and San Francisco, California (Proc. U. S. Nat. Mus., XXIV, June 9, 1902, p. 839), are true *Otocoris alpestris strigata.* There is in this new race the individual variation usual in the forms of *Otocoris alpestris.* Three breeding specimens from Milton, California, are intermediate between *Otocoris alpestris actia* and the present form, but though larger than the former and with a somewhat darker, more cinnamomeous nape, they are almost the same in color above and have no yellow on the posterior lower parts; so that they are, without much doubt, referable to *Otocoris alpestris actia.*

The present new race apparently does not breed in the Sacramento Valley, although it occurs there with seeming regularity in winter.

Detailed measurements of the specimens of *Otocoris alpestris sierrae* examined are given below.

MEASUREMENTS OF SPECIMENS OF *OTOCORIS ALPESTRIS SIERRAE,* ALL FROM CALIFORNIA

Museum and No.	Sex	Locality	Date	Collector	Wing	Tail	Exposed culmen	Tarsus	Middle toe without claw
U.S.N.M.203534	♂	Head of Pine Creek, Lassen Co. [1]	June 13, 1906	A. S. Bunnell	100	67	11	21	11.8
U.S.N.M.203533	♂	Head of Pine Creek, Lassen Co.	June 13, 1906	A. S. Bunnell	96	65	11	21.8	11
U.S.N.M.203532	♂	Head of Pine Creek, Lassen Co.	June 13, 1906	A. S. Bunnell	101.5	71	10.8	20	12.2
U.S.N.M.166666	♂	Donner	July 8, 1900	W. K. Fisher	94.5	65	12.2	21	11.8
U.S.N.M.163961	♂	Bald Mt., Shasta Co.	Sept. 11, 1898	W. H. Osgood	101	66	12	22	11.5
U.S.N.M. 80477	♂	Yuba Co.	Feb. .., 1877	L. Belding	101	69	10.9	20.8	11
U.S.N.M.124408	♂	Gridley	Jan. 25, 1891	L. Belding	103.5	72	11	22.5	12.2
J.E.Thayer 4231	♂	Enterprise, Butte Co.	Feb, 5, 1897	G. F. Brenninger	105	71	10	21	11.8
U.S.N.M.163962	[♀]	Bald Mt., Shasta Co.	Sept. 11, 1898	W. H. Osgood	95	68	11	21	11.2
U.S.N.M.106999	"♂" [♀]	Summit	Aug. 16, 1885	L. Belding	89	..	10	20	11.2
U.S.N.M. 98419	♀	Red Bluff	Dec. 19, 1883	C. H. Townsend	94	64	9.5	20	11.5

[1] Type.

Washington, D. C., September 26, 1919.

FROM FIELD AND STUDY

Migrations of the Pinyon Jay in Colorado.—The Pinyon Jay (*Cyanocephalus cyanocephalus*) is an erratic bird in Boulder County and other portions of Colorado beyond the range of the pinyon pines, "continually changing location according to food supply" (Cooke). Betts says they have been seen in Boulder County every month of the year except December. For several years, in May, especially late in the month, they have been seen flying over Boulder daily in large flocks, almost always moving a little west of north. This has been so regular as to indicate a normal spring migration, such as occurs in Wyoming, according to Knight. I have also seen them in October and November at Boulder, flying in various directions, but mostly south. The puzzling autumnal movement of these jays at Boulder in 1919 has attracted the attention of many persons who ordinarily do not notice the birds very closely. Beginning about August 25 they were seen daily flying over in scattered groups and small flocks, passing so continuously sometimes in the mornings that for an hour or two their harsh calls could be heard almost without cessation, and less continuously later in the day. Up to October 8 many thousands passed, almost without exception flying about ten degrees north of east, from the mountains out over the plains, at right angle with the spring flight. I saw them but once flying in any other direction, and that was the last flock seen, about fifty birds, on October 8, flying in exactly the opposite direction. All observers here report about the same experience. Mr. Geo. E. Osterhout, of Windsor, northeast of Boulder, wrote on October 6 that he had seen no Pinyon Jays there this season. Professor L. A. Adams, of Teachers College, Greeley, wrote on September 23 that he had seen none until September 16, two days after my letter reached him, when they first appeared and had been flying over almost every day since in large flocks, travelling east. In another sentence he says "always going or coming from the west to east or vice versa." Mr. W. L. Burnett, of the State Agricultural College, Fort Collins, wrote on September 20 that he had not seen or heard any of the jays there this season. I should like to know whether other observers have noted their movements east of the Rockies in Colorado, Wyoming or adjacent states.—Junius Henderson, *Boulder, Colorado, November 10, 1919.*

The Clarke Nutcracker at Point Pinos, Monterey County, California.—On November 2 and 3, 1919, a single Clarke Nutcracker (*Nucifraga columbiana*) visited my dooryard, at the western edge of the town of Pacific Grove. On both occasions there was a low fog. The bird was rather tame and was apparently attracted by my small grove of pines. It took advantage of the fine spray of a garden sprinkler for a sketchy bath, and made an unsuccessful attempt to open a Monterey pine cone. During the second visit it foraged, somewhat after the manner of a flicker, among the fallen pine needles, and before leaving perched for about three minutes on an electric service wire, uttering the characteristic "boreal" calls. It was not alarmed by several noisy autos which passed almost beneath. Since that time and up to date (December 28) I have seen or heard the birds several times each week and they have been reported elsewhere on the peninsula. They seem to take kindly to the cones of the Monterey pine.—W. K. Fisher, *Hopkins Marine Station, Pacific Grove, California, December 28, 1919.*

Segregation of Male Mallards.—In reading Mr. Aldo Leopold's interesting article on "Differential Sex Migrations of Mallards in New Mexico", in the September-October Condor, I recall that in Wisconsin twenty years ago we not infrequently found winter flocks composed of green-heads alone. I have no records of migrating flocks of any size that were made up entirely of birds of one sex, nor of large winter flocks of females alone, but I have definitely noted a number of times large winter flocks composed entirely of males. Many Mallards (*Anas platyrhynchos*) of both sexes remained throughout the winter in the southeastern part of the state, feeding principally in cornfields on the larger prairies. During the bitter winter weather, when the lakes, ponds, and creeks were all tightly covered with ice, the only water available for the birds was in certain small spring-holes that were never frozen. The Mourning Dove, Wilson Snipe, Ameri-

can Merganser, and still more uncommon winter residents sometimes came to these springs, and because of the interesting possibilities, I visited them regularly. The Canada Geese wintered in good numbers on the prairies in company with the Mallards, but never came to the spring-holes, and it was generally believed that during the zero weather they obtained water only by eating the snow. At different times I have crawled close to small spring-holes near the tightly frozen creeks and found the open water actually covered with Mallard drakes in perfect plumage, the brilliant green heads in mass beautiful against the background of snow. I have noted fifty or more males thus packed in a single small spring, with not one female in the immediate vicinity.—N. Hollister, *National Zoological Park, Washington, D. C., November 5, 1919.*

Empidonax griseus in Oregon.—The first known occurrence of *Empidonax griseus* in Oregon was recorded by Mr. Stanley G. Jewett (Condor, xv, 1913, p. 229), and was based on a specimen taken on June 25, 1908, at Wright's Point, 15 miles south of Burns. Since then several other records have appeared in print, but our knowledge of the distribution of this species in the State is still so meager that additional data are worth publication. Three unrecorded specimens are at present in the collection of the Biological Survey, as follows: No. 140165, U. S. Nat. Mus., adult male, Burns, Oregon, July 6, 1896, collected by Vernon Bailey; no. 141959, U. S. Nat. Mus., adult female, Narrows, Oregon, July 25, 1896, collected by E. A. Preble; and no. 140164, U. S. Nat. Mus., adult male, Elgin, Oregon, May 27, 1896, collected by Vernon Bailey. It will be noticed that all three of these specimens were obtained twelve years before the one that was first reported from the State by Mr. Jewett, although they have remained unmentioned until now.—Harry C. Oberholser, *Washington, D. C., October 1, 1919.*

The Anna Hummingbird as a Fly-catcher.—Mr. Tracy I. Storer (Condor, xxi, no. 3, p. 125) and Mr. Joseph Mailliard (Condor, xxi, no. 5, p. 212) have given a list of birds other than Tyrannidae which follow the flycatcher habit of catching insects on the wing. I have one more to add to this list. A letter written by me in January, 1919, to a friend reads: "I witnessed another deviation from the general habits of this bird [refers to the Anna Hummingbird (*Calypte anna*)] last summer. August 23 [1918] near five o'clock in the evening my attention was attracted by one perched on a wire in the back yard. I saw the bird dart into the air a short distance and return to the wire. Another moment and the act was repeated and this time just preceding the flight I noticed a movement of the head as if the bird were watching something passing over. I then suspected that the bird was catching insects and soon after I saw it snap a small white moth from the air. It continued feeding in this manner each evening for about an hour, until I left the city on October 20; and when I returned November 6, I found it had disappeared."

Last summer (1919) after an absence of about six weeks, I returned home September 4 to find the same wire occupied in the evenings by one, two, and at times three of this species, all darting into the air for insects. They continued feeding in this manner until about November 1, and at the present writing (November 20) they are still flying about this locality, but are visiting blossoms for food. Also last September (1919) I witnessed precisely the same performance described by Mr. Mailliard at the Bohemian Grove. I was resting in Union Square, San Francisco, when an Anna Hummingbird swooped over the palm tops, poised in the air about ten feet from the ground for a few seconds, and darted into a swarm of gnats, snapped up several of them and shot like a rocket over the St. Francis Hotel.—Frank N. Bassett, *Alameda, California, November 22, 1919.*

Colorado Notes.—My own opinion as regarding the winter members of a species coincides with that of Professor Henderson, namely, that they are merely the northern representatives moved in temporarily. As evidence of this, the Red-wings (some scattered birds) even as far out as Hudson, on the prairie, leave some time the last of February and the first of March. After this time there is a marked scarcity of Red-wings until the regular influxes of spring begin. Especially was this pronounced in the springs of 1916-17-18. During the same seasons this was also true of the Cowbird and

Brewer Blackbird, a goodly number of which species always winter around the ranches on the prairies. My series of winter Red-wing skins does not as yet show marked differences in measurements worthy of tabulation. However, a series of winter Robins is proving to have some interesting differences as compared with the summer residents.

In view of Professor Henderson's notes on the activities of Pinyon Jays (*Cyanocephalus cyanocephalus*), I will say that on October 15, 1919, I saw a flock of about twenty-five passing over the Denver business district, in spite of the smoke and the city sounds, headed in a northeasterly direction. Then again at Elbert, Colorado, some fifty miles distant from Denver, and about the same distance from Pike's Peak, I observed several small flocks of from half a dozen to a dozen, flying high in a northeasterly direction; time about noon. On the same day there were scattered flocks feeding on grain stacks in the valley around Elbert. They all seemed to remove to the pine ridges in a southwesterly direction at night, which led me to think these latter were not engaged in the same movements as those seen earlier in the day. Occasionally they are seen in the summer around Elbert, but I am positive that they do not nest there.

I might say further that Golden Eagles (*Aquila chrysaetos*) appear to be on the increase in the region of Elbert, and that this is not due to an increase in rabbits, which latter are not so numerous on account of the growing number of coyotes (bounties having stopped because of the war). Trapping is growing in popularity again, and an astonishing number of eagles are being killed because of their absolute fearlessness of trap bait. Then, too, some of the country folk are killing them because of a popular belief in their destructiveness. Of five stomachs examined in 1917, one was empty, two contained evidences of cotton-tail, and two contained evidences of both cotton-tail and prairie-dog. Bald eagles are exceedingly scarce in Colorado.

During the summer of 1918, at least a dozen pairs of Mockingbirds nested along three or four miles of a small stream near Elbert, and this year I heard not a single bird in my travels about the county.—Ralph Hubbard, *Elbert, Colorado, November 10, 1919.*

Birds Returning to Their Old Haunts.—At a late summer meeting of the Cooper Ornithological Club, in 1919, a discussion arose concerning the possibility of pairs of birds migrating separately and returning to the same spot to mate again the next season. In a matter of this sort there is vast room for discussion, of which I do not intend to take advantage here, but will advance the proposition that if one of a pair of birds returns to the same spot in succeeding seasons there seems no reason to suppose that the other may not do so also, provided, of course, that it has not been prevented by some fortuitous circumstance.

Two cases of the return of certain birds not only to general localities but actually to small, defined areas, have come to my notice during the past year (1919), and if one bird thus returns why may not its mate? Which opens up the possibility, if not the probability, of the two mating again.

The first of these cases occurred at the Bohemian Grove, near Monte Rio, Sonoma County, California, where it is an annual habit with me to pass at least a couple of weeks in camp during the midsummer. While there in the summer of 1918 my curiosity was greatly aroused by a remarkable bird call often to be heard in the brush just outside the main entrance to the grove proper, on land from which the large timber had long since been cut off. Several attempts to locate the bird had failed, and the prospect of identifying it in that hillside of thick bushes and small trees was anything but encouraging. However, continued study of the situation led me to discover that the sound came a little more frequently from one particular clump of redwood saplings not very far up on the hillside than from any other one spot. Hence one morning I scrambled on hands and knees under the bushes to this clump and lay there motionless for a long time.

Few birds came within the range of vision, but after a long wait a Russet-backed Thrush (*Hylocichla ustulata ustulata*) appeared on a twig right over my head, not over three or four yards away, and, to my amazement, uttered the call which had been so impossible to identify, and which was no more like the notes of a thrush than the mew of a cat is like the bark of a dog. This bird remained overhead for some minutes, frequently repeating its queer cry; but in several instances one or two of the first

notes of the natural song of this species were given before its voice broke into the unnatural one, but these preliminary notes were very faint and would not have been detected at any distance away. Certainly one would have guessed almost any other bird in the A. O. U. Check-list as the producer of these curious sounds rather than a Russet-backed Thrush. In fact, up to the moment of the solution of this problem, I had about made up my mind that the bird must be an extralimital escape from some cage.

Soon after reaching the camp the next summer, that is, in June, 1919, I was greeted by this now familiar sound in the same place as it had been heard the year before, although the bird seemed to stay about a hundred yards higher up on the hillside, for the most part, than in the previous year. Having Dr. Barton W. Evermann, Director of the Museum, California Academy of Sciences, as my guest for a few days during this stay at the Grove, I took particular pains to lead him to the bird's favorite singing ground so that he, too, might hear this peculiar song and be witness thereto. While we did not catch sight of this bird in the act of singing, if such a combination of sound could be called by that name, he can bear witness to the fact that the song was most certainly unique.

This bird assuredly returned to the same spot two years in succession, so why may not its mate have done so as well?

In the second case of a bird's return, it was seen again not only in the same locality but in the same bush. This bird was a Nuttall Sparrow (*Zonotrichia leucophrys nuttalli*), in Golden Gate Park, San Francisco, California, which had been particularly noticeable in the early part of 1919 from the fact that the auricular and malar regions were very decidedly paler than is usual with this species. As is the case with most of the birds in the Park, it was fairly tame, and in March and early April we would frequently see it in some bushes near the main entrance to the California Academy of Sciences on our way to and fro. After that it was lost sight of until one morning in September, when it showed up again, but this time with the lighter colored spots almost pure white. While it is true that this species breeds in the Park, and that this individual may not have gone far away during its temporary absence from our pathway, the chances are equally good that it was one of those that winter in this latitude and breed farther north, as so many of this species do. This case is the reverse of the first one, in that the bird returned in the *fall* to its favorite spot, instead of in the breeding season, but if it returns to one spot at one season, why not to another spot at the other season of the year?—Joseph Mailliard, *San Francisco, November 1, 1919.*

Clarke Nutcracker at Sea.—On the boat coming up from Lower California, in September, what I took to be a Clarke Crow (*Nucifraga columbiana*) came on board somewhere between Los Angeles and San Francisco and remained until we came into port. I noticed the bird in the morning after leaving Los Angeles, but some of the other passengers said it came on board the evening before, when we were only a short distance out from that place. This is so far out of the normal range of this bird that I was much interested in speculating as to whence he came and whither he would eventually go. Will he find his way back again to the mountains?—G. F. Ferris, *Stanford University, California, November 9, 1919.*

Nesting of Western Robin and Spotted Sandpiper.—Records of the finding of actual nests of the Spotted Sandpiper (*Actitis macularia*) in southern California are still unusual enough to be worthy of record. On August 1, 1919, near Kern Lake, Tulare County, and at an approximate altitude of 6800 feet, I found two nests containing four eggs each, situated under pieces of driftwood on sandbars in the river. These eggs hatched next day. There were probably several broods raised in the vicinity as fully grown young were common, a fact indicating that the nests found by me were second sets.

I am not aware that the Western Robin (*Planesticus migratorius propinquus*) has ever been reported as breeding in the Lower Sonoran Zone. In June, at Visalia, Tulare County, I discovered two nests of this bird in oak trees, both containing young. Many adults were noted about the town during the summer months.—A. van Rossem, *Los Angeles, California, October 22, 1919.*

Clarke Nutcracker on the Colorado Desert.—On October 17 and 18, 1919, I was hunting at Marchal's Ranch, which is ten miles west of Indio and about fifteen miles east of Palm Springs, Riverside County, California. It seemed strange to find Clarke Crows (*Nucifraga columbiana*) there. The birds were very tame and walked about almost in the camp. They seemed to be feeding on dates. I saw the crows flapping about the fruit clusters, and saw them flying overhead with what I took to be dates in their bills. There were probably a dozen birds about the ranch. A former student of mine, who is now teaching in the Coachella Union High School, told me of seeing the birds around the school buildings. The High School is probably twelve miles east of Marchal's. Indio is 22 feet below sea level, according to the figures on the sign at the Southern Pacific depot there.—C. O. Esterly, *Occidental College, Los Angeles, California, October 28, 1919.*

Saw-whet Owl from the San Bernardino Mountains, California.—On May 10, 1919, I was fortunate enough to collect a juvenile female Saw-whet Owl (*Cryptoglaux acadica acadica*) at an altitude of 6950 feet, Big Bear Valley, San Bernardino Mountains, California. This is the first recorded instance for this locality, I believe. To quote Mr. Swarth, to whom I sent the specimen for verification of identification: "The little owl you sent is the Acadian Owl, *Cryptoglaux a. acadica.* It is in the juvenile plumage and I should infer was hatched somewhere in the neighborhood of where it was killed. The species has not been recorded as breeding south of the central Sierra Nevada, so far as I know and your bird is well worth recording; it is an interesting take." This bird is now no. 1830, collection W. M. P.—Wright M. Pierce, *Claremont, California, October 18, 1919.*

Bubo virginianus lagophonus in North Dakota.—That the Northwestern Horned Owl (*Bubo virginianus lagophonus*) is more or less inclined to wander during the autumn and winter is evidenced by the capture of specimens of this race in Colorado and Nebraska. Both of these states are well without the breeding range of this subspecies, as is also North Dakota. There is, so far as we are aware, no published record for the last-mentioned state, and we are, therefore, through the courtesy of Mr. J. D. Allen of Mandan, North Dakota, pleased to be able to add it to the list of North Dakota birds. A specimen of *Bubo virginianus lagophonus* was captured at Fort Clark, near Stanton, North Dakota, on March 14, 1918, by Mr. J. Danielson, and sent Mr. J. D. Allen to be mounted. It is an adult in perfect plumage and is practically typical of this subspecies.—Harry C. Oberholser, *Washington, D. C., October 1, 1919.*

Effects of a Storm on the Bird-life of the Sea.—Off the Golden Gate a southerly gale commenced on the night of December 3, 1919, raging through the early morning hours and throughout the day of December 4, subsiding somewhat in fury toward sunset, but increasing again during the following night. It broke finally on the morning of December 5, and about 9 A. M. of that day my assistant curator, Mr. Luther Little, was despatched, in spite of squalls and occasional drenchings, upon a tour of investigation along the ocean beach from the sea end of Golden Gate Park (San Francisco, California) southward, to learn what he could of the effects of the storm upon the seabirds of this locality. The velocity of the wind had been variously reported from ships as high as 84 miles per hour, but the most reliable report was probably from the Pt. Reyes light station, which gave it as 75 miles, and the surf had been running very high.

Little returned toward noon laden with a heavy burden of bedraggled and water-soaked bodies of seabirds. His load consisted of the following: 1 Horned Grebe (*Colymbus auritus*), 1 Rhinoceros Auklet (*Cerorhinca monocerata*), 2 California Murres (*Uria troille californica*), 2 California Gulls (*Larus californicus*), 1 Western Gull (*Larus occidentalis*), 1 Ring-billed Gull (*Larus delawarensis*), 1 Short-billed Gull (*Larus brachyrhynchus*), and 3 Pacific Fulmars (*Fulmarus glacialis glupischa*). All were more or less battered by wind and waves; seven were in a sufficiently good state of preservation to make fair specimens. The stomachs of all were empty, and the birds were in a more or less emaciated condition.

The next morning (December 5), fortunately clear and calm, Little and I sallied forth to again search the beach, which we did for about two miles, covering a little more ground than he had gone over the previous day, with the idea in view of identifying all the birds we could find that had been washed ashore after the storm. Little said that the surface of the beach had been considerably changed since he had been there, and that some of the bodies he had noted had disappeared, while others had either been uncovered again by the waves at high tide or had been blown ashore since his visit.

Some of the birds were lying out in plain sight on the beach, while in other cases perhaps only a feather or two showed above the sand. Many gave evidence of having been sadly buffeted by wind and waves and none were in a condition to allow of preservation except three Sanderlings, which seemed quite fresh and probably were killed only the night before. Only the birds that were fresh enough to be without doubt the victims of this storm were given consideration, but there were a few older carcasses here and there, of other species than those enumerated herein.

The numbers and species of these recent victims were as follows: 1 Tufted Puffin (*Lunda cirrhata*), 4 California Murres (*Uria troille californica*), 1 Pacific Kittiwake (*Rissa tridactyla pollicaris*), 1 (immature) Glaucous-winged Gull (*Larus glaucescens*), 1 Western Gull (*Larus occidentalis*), 1 Herring Gull (*Larus argentatus*), 1 Ring-billed Gull (*Larus delawarensis*), 1 Short-billed Gull (*Larus brachyrhynchus*), one gull so soaked with oil as to be unidentifiable, 1 Pacific Fulmar (*Fulmarus glacialis glupischa*), 1 Sooty Shearwater (*Puffinus griseus*), 1 California Brown Pelican (*Pelecanus californicus*), 1 Brandt Cormorant (*Phalacrocorax penicillatus*), 1 White-winged Scoter (*Oidedemia deglandi*), and 3 Sanderlings (*Calidris leucophaea*). About two miles of shore were covered on these two mornings, the total number of birds found dead being 32. Doubtless there were some others buried in the sand, and as it is hardly reasonable to suppose that all those killed off-shore in these two miles of latitude had been washed up on the beach, the actual toll of this storm must have been greater therein than the count of the victims on the beach would show.

The species above enumerated were almost all, if not entirely, of those that inhabit the waters adjacent to the coast or near-by islands, and on this coast their winter habitat is a narrow belt of comparatively few miles in width for a long distance north and south of San Francisco Bay. If the storm raged as furiously over a large part of this habitat, the mortality must have been great, judging by the results of our two miles search.

It was most discouraging to find the beach strewn with cakes of solidified crude oil, the sizes of these cakes varying from only a few drops stuck together to as large as a big frying pan, showing that ships are still dumping the oil refuse from their tanks in our waters. Some of the birds found were either partly or entirely incapacitated by coming in contact with it, a couple being absolutely saturated with the oil.—Joseph Mailliard, *San Francisco, December 9, 1919.*

Clarke Nutcracker at Carmel.—I am indebted to Mrs. Edward A. Kluegel for the following notes on the Clarke Nutcracker (*Nucifraga columbiana*) as occurring in Carmel, Monterey County, California. The first one observed was on November 7, 1919, in a tall pine. On November 9 one was watched hopping about on the ground, appearing quite tame and unafraid. Since then, varying numbers have been observed, until on November 30, twenty-seven were counted in one company.—Jane L. Schlesinger, *Oakland, California, December 6, 1919.*

Habits of Oceanodroma leucorhoa beali versus O. socorroensis.—Following directions kindly furnished me by Mr. C. I. Clay, I visited on July 16, 1919, an island of about six acres extent which lies one mile southwest of Crescent City, Del Norte County, California, and spent the day investigating its bird life. I estimated that there were close to ten thousand pairs of petrels nesting there, and one may well imagine that the day proved to be one of the most enjoyable of my life. Every foot of soft ground was not only occupied, but the tunnels were two and three layers deep, and freely intercommunicated. Indeed, it was impossible to dig more than an inch or two

without encountering a burrow, and there were often five or six nests to the square foot.

The vast majority were *Oceanodroma leucorhoa beali*, and the rule at this date was eggs on the point of hatching, although there were many young in all stages up to two-thirds grown. I noted one nest with the bird incubating two pipped eggs, and there was no other nest nearby from which an egg might have rolled. One *Oceanodroma furcata* was discovered on a fresh egg, and three young of this species, ranging from half to fully grown, were found. The adult was in a separate pocket of the same burrow with a brooding *beali*. The latter form prefers the softest ground, while the former seemed to select the edges of banks where small stones are mixed with the dirt, or the interstices in a pile of loose stones. As I am rather familiar with *Oceanodroma socorroensis* during the nesting season, it may be of interest to compare some of its habits with those of *beali*.

The Socorro Petrel begins laying on the Coronados Islands during the middle of June or a trifle later, while *beali* must start not later than the first week of that month, and probably before. The climate of Crescent City, even in mid-summer, is very cold and foggy, while that of the Coronados is warm and bright. Hence, I would expect at least three weeks difference in nesting dates, but in the opposite order, and for lack of a more plausible explanation, we may attribute the actual state of affairs to food conditions.

Each species occupies only burrows which the birds themselves construct. Those of the Socorros are about two feet long, while the average length of the Beals is seventeen inches—a difference which may be blamed upon the crowded quarters of the latter. This form employs about twice the amount of weed stems for nest building as does *socorroensis*, and this is possibly due to the difference in climate. *Beali* is much more prone to eject oil than is the southern species, but none of the *furcata* which I secured showed any tendency to indulge in such tactics. In flight, the wing beats of *beali* are quicker; and I think that one who is familiar with both forms would have no trouble in distinguishing them apart while on the wing, if they be seen together. The main item of food of the Socorros is supposed to be larval rock lobsters, and this probably accounts for the fact that the deposit of fat on them is a pronounced red, almost the color of a brick, while *beali* feeds on other fare, and its fat is of the usual shade.

In both colonies, almost every foot of suitable ground is occupied, but on the small island of the Coronados group where the Socorros are found, this is of very limited extent, and the colony is crowded with but a few hundred pairs, while the northern island is almost ideal. There are no other birds, except a few guillemots, nesting upon this island to entice eggers; it is not far enough from the mainland to attract parties of all-day picknickers; and, for the same reason, cats are not likely to be introduced by campers. In fact, the only damaging influence seems to be a Barn Owl, which probably flies over from the mainland and raids the petrels every night, to which hundreds of wings scattered beneath the rocky points bear mute witness.—A. B. Howell, *Pasadena, California, November 10, 1919.*

Further Colorado Notes.—In the last number of *Bird-Lore*, Dr. Bergtold mentions the recent extension of the summer range of the Lewis Woodpecker (*Asyndesmus lewisi*) eastward onto the plains in Colorado. It has formerly been considered a mountain bird in the summer time in this state, but we now hear of it frequently in the breeding season far from the foothills. On June 28, 1917, I saw a pair with a nest in a telephone pole at Boone, far out on the plains, a long distance east of Pueblo. The same author also mentions the decrease in the number of English Sparrows in Denver. Their scarcity in portions of Boulder this year has been noted by people who do not ordinarily notice the birds very much. Whether it is only a temporary condition due to the exceptionally dry, hot summer, or to some other cause, I cannot hazard an opinion. Possibly the decrease has been going on for several years but has just attracted attention. We do not regret it.

Dr. Bergtold also mentions the disappearance of Bullock Orioles from Denver early in August and their reappearance later in the month for a few days before their final disappearance for the winter. He suggests that perhaps the summer birds leave early

for the south, and that those appearing later in the month are from the north on their way south. A similar movement of Robins occurs at Boulder each year. They almost disappear early in August, reappearing in large numbers about the middle of September, remaining for several weeks, then mostly leaving for the south. Occasional individuals may be seen about town all winter, and numbers remain in the mountains, feeding on cedar berries in sunny pockets on south slopes and waxing fat. I have always believed the winter birds may be from the north, but have supposed the disappearance in August was due to a retreat into the mountains for privacy during the molt. Each year the Robins are very abundant in late August and early September at altitudes of from 9,000 to 11,000 feet, when scarce at Boulder.—JUNIUS HENDERSON, *Boulder, Colorado, November 10, 1919.*

Lincoln Sparrow in San Francisco.—Another species to be added to the list of birds of San Francisco, California, is the Lincoln Sparrow (*Melospiza lincolni lincolni*), the record for which came about as follows: On September 13, 1919, while walking south along Broadway from Fillmore street, shortly after the noon whistles had blown, I came across a bird of this species lying on the sidewalk. It had evidently flown against one of the wires overhead with sufficient force as to cause instant death, the contusion being plainly visible upon the side of the head and neck. This accident must have happened in the night, for the condition of the bird's body was such as to show that it had been dead for some hours. In fact a few of the feathers of the abdomen "slipped", in making up the skin, where the sun's rays had hastened decomposition. It proved to be a male bird of the year.—JOSEPH MAILLIARD, *San Francisco, November 1, 1919.*

Some Bird Records from Nebraska.—The following records of Nebraska birds perhaps deserve publication. They consist of species observed near or beyond the limits of their hitherto known summer ranges, or of occurrences otherwise interesting from a distributional standpoint. They were all obtained in Cherry County, in the central northern part of the State, during the writer's investigation of the wild fowl of that region.

Chaetura pelagica. Chimney Swift. A single individual was seen at a ranch a few miles west of Cody on June 1, 1915.

Sayornis sayus. Say Phoebe. Two were observed in the streets of Valentine on June 2 and 3, 1915.

Hylocichla mustelina. Wood Thrush. One was heard singing in the timber along the Niobrara River eight or nine miles south of Valentine on June 3, 1915.

Vireo bellii bellii. Bell Vireo. This species was found on the Niobrara River a few miles south of Valentine on June 3, 1915; twice on the upper part of Gordon Creek, a few miles north of Simeon, on the same date; and on the island in Dewey Lake in eastern Cherry County on June 4, 1915.

Hedymeles melanocephalus papago. Black-headed Grosbeak. A full plumaged adult male was seen at the Tate Ranch near Tate Lake in southeastern Cherry County on June 18, 1915.

Guiraca caerulea lazula. Western Blue Grosbeak. A single adult male of this species was observed along the North Loup River, five miles east of the Palmer Ranch, on June 17, 1915.

Spizella pusilla arenacea. Western Field Sparrow. A single individual was observed on June 16, 1915, at the Palmer Ranch in western Cherry County, which is about eight miles east of Pullman, and near the source of the North Loup River.—HARRY C. OBERHOLSER, *Washington, D. C., October 1, 1919.*

Old Squaw Ducks at San Diego.—On January 4, 1920, Mr. Ad. Pearson saw three unrecognized ducks in a tide slough (mouth of San Diego River) at Mission Bay. He shot one and brought it to me for identification. It proved to be an adult female Old Squaw (*Harelda hyemalis*).—FRANK STEPHENS, *San Diego, California, January 6, 1920.*

EDITORIAL NOTES AND NEWS

Doubtless many bird students join us in our feeling of dismay regarding the very great number of new names and combinations of names being proposed in current literature for the birds of western North America as well as for the rest of the world. Very many of these changes are due to the splitting of genera or else to the introduction of trinomials on the ground of supposed intergradation through individual variation. Both of these practices are of a sort to be closely dependent upon personal opinion and not upon well definable conditions in nature. We believe we are right in urging that purely nomenclatural questions, such as these, had best *not* be followed in current literature until passed upon authoritatively by vote of some qualified body of professional ornithologists such, for example, as the A. O. U. Committee on Nomenclature. It is true that the body just referred to has been relatively inactive now for nearly ten years and that an enormous number of cases await its consideration when it does get into action. Some may doubt whether adequate consideration can ever be given so great a number of questions by any "committee". But in cases of a nature where arbitrary decisions must be made, some method of voting to secure decision, and this by some authoritative body, is the only way we can see of solving the problem of permanency of nomenclature. We must not be understood here as in any way slighting the importance of the recognition of subspecies; that is part of *ornithology*. But this other thing is merely a matter of the mechanics of nomenclature.

It is a source of gratification to those who have given time and energy in promoting the welfare of the Cooper Club to learn that several of the members, in an unofficial capacity, some time ago started an endowment fund for the Club. A committee, consisting of J. E. Law, W. L. Chambers and A. B. Howell, has now been elected to take charge of the soliciting of contributions to this fund, and investing the money, the interest on which is to be used for the purpose of enlarging THE CONDOR and publishing Avifaunas. We learn that the appeal is meeting with a hearty and substantial response and that contributions are being received not only from those who were anticipated benefactors, but also from many who were supposed to take only a moderate interest in ornithology and in the Cooper Club. If well managed and well supported, a movement of this kind is cumulative in effect and should meet with very large sucess, but only providing that the membership at large is sufficiently in sympathy with it to lend the full weight of their approval, both moral and financial. In this connection it is proper to make it known that the plan was first formulated by Mr. A. Brazier Howell and by him carried out to a point where its practicability was assured.

The December bulletin of the California Nature Study League, which is sent out by Mr. C. M. Goethe, 720 Capital National Bank Building, Sacramento, contains a very readable account of the Sparrow Hawk. It refers to early-day falconry in pleasant vein, and rightly emphasizes the capacity of the bird as a devourer of grasshoppers. This bulletin may be had by C. O. C. members regularly without cost, upon personal request to Mr. Goethe, as above. Mr. Goethe's efforts are being directed, and with good results, toward the spread of interest in nature study among school children. What the country needs is a citizenry that can see clearly and interpret accurately. Natural history provides a splendid vehicle for education in this direction.

A meeting of men interested in mammalogy was held at the California Museum of Vertebrate Zoology, Berkeley, on the evening of Thursday, January 8, 1920, for the purpose of perfecting a local organization devoted to various aspects of the study of mammals. Fourteen individuals were present, and coyotes and kangaroo rats formed the topics of discussion. It was decided to petition the recently formed American Society of Mammalogists for the formation of a Northern California Section of that society.

A new museum has been opened at Yellowstone Park, Wyoming, for the preservation and exhibition of all sorts of natural history specimens of the region such as will help tourists to understand the problems of nature in that wonderful region. The National Park Service has appointed Mr. M. P. Skinner to be in charge of this museum; and Mr. Skinner extends a hearty invitation to his fellow C. O. C. members who happen to visit the Yellowstone National Park to look in at the museum and to avail themselves fully of its facilities.

The Museum of Vertebrate Zoology of the University of California has received an endowment of $200,000, the proceeds of which are to be used henceforth and exclusively for its maintenance. This sum was offered to the University by Miss Annie M. Alexander on December 5, 1919, and was accepted by the Regents for the purposes specified on December 9. Miss Alexander in this way insures the permanence of the scientific work which she started twelve years ago. West

coast ornithology has increased in rate of growth markedly with the development of this Museum, and we may reasonably expect the institution to continue to serve in this field usefully throughout the future. A special condition of the endowment is that the first attention of the staff must be devoted to the proper care of the collections of birds, mammals, etc., so as to preserve them safely against the numerous dangers which continually beset museum materials. Another condition is that the Museum's collections be made easily available for study by responsible investigators, not only in Berkeley, but anywhere else.

Mr. Harry H. Sheldon, for some years connected with the United States Biological Survey, is now back in California, having taken up ranching at Carpinteria.

Mr. Leon L. Gardner, of Claremont, California, carried on some interesting experiments last summer under the direction of the United States Biological Survey, in Klickitat County, Washington, in an effort to control the plague of crows which was menacing the almond crop of that section. Green almonds poisoned with strychnine were found to be a satisfactory bait.

PUBLICATIONS REVIEWED

LIFE HISTORIES OF NORTH AMERICAN DIVING BIRDS—ORDER PYGOPODES. By ARTHUR CLEVELAND BENT. United States National Museum, Bulletin 107, pp. xiii+245, pls. 1-55 (12 colored); 1919 (our copy received September 2).

Ever since formal announcement was made in 1910 that Mr. A. C. Bent was to take up the work left unfinished by Major Bendire on the "Life Histories of North American Birds" the ornithological public has been waiting the results with keen anticipation. The appearance of the first volume, giving the life histories of the Pygopodes, fully justifies the long wait which has intervened.

The present contribution differs from the volumes issued under the pen of Major Bendire in several respects. In place of the unwieldy quarto we have the standard government octavo which lends itself to more convenient use, and the data pertaining to each species are segregated under subject heads, while quoted material is rendered in smaller type than the body of the text.

The account of each species is prefaced by a paragraph which introduces the reader by way of some striking incident or habitat description to the subject of the chapter. Then follow, in more formal style, paragraphs relating to "habits", involving discussions of spring behavior, courtship, nesting, eggs, young, plumages, food, and behavior (excluding courting antics but including voice). Where pertinent, notes on fall and winter behavior are given. Under the general heading "distribution", which follows the account of habits, are given breeding range, winter range, spring migration, fall migration, casual records and egg dates.

In endeavoring to make each chapter as complete as possible the author has made free use of the published writings of other observers and in some instances material covering one specific point is quoted from several sources. But Bent's own travels and field studies have been extensive enough to enable him to contribute directly and importantly to almost every species chapter. Two chapters, those on the [Atlantic] Puffin and Great Auk, are entirely from the pen of Dr. Charles W. Townsend.

The sequence in which the species are treated and the nomenclature are both of the A. O. U. 1910 Check-list. The artificiality of the mixed assemblage here dealt with ("Order" Pygopodes) is brought out with striking clearness in this work where *life* characters are described in detail. But this is no criticism of the author's work; his is but another contribution to the already large mass of evidence accumulating which will eventually force a change in the arrangement of certain major groups in our American check-list.

It is impossible in the space available here to pass judgment upon the merits of the individual species chapters and it would be presumptuous for any one to attempt such an assessment of value without having himself been over much of the ground which the author has covered. We restrict ourselves therefore to comments upon some of the more general features of the work.

The use of "titles" in connection with authors' names in the text appeals to us as misleading, in that it tends in some cases to give greater authority to the items quoted. In many instances the authors involved received these "titles" long after the accounts in question were written. The surname alone, with initials only where necessary to distinguish between two individuals with the same surname, is much to be preferred. The term "references to bibliography" on page 225 is misleading; "literature cited" would be more applicable. And the titles are too brief; references to articles in periodical literature ought to give inclusive page

numbers; and citations of separate works ought to include place and name of publisher, edition, and pagination. This is especially necessary in a work like the present one which will be an important volume of reference for years to come. We would prefer to see vernacular names of species in text set off with capital initials, and the running page heads would be much more useful with vernacular names of species in place of the title of the work. The egg records seem to be too condensed. A brief analysis of the season, or a graphic representation of the data, especially where such a wealth of material has been examined, would have been highly worth while. But all of these are minor points.

We strongly commend the segregation of material under subject heads in the species chapters, this being an arrangement which greatly facilitates reference work. The rather complete accounts of molts and plumages bring together for the first time as regards our American Pygopodes discussion of this important subject. In the discussion of distribution the relegation of "casuals" to a separate category is highly satisfactory. Finally, the illustrative material calls for special comment, that from the camera even more than the colored plates of eggs, as we realize from personal experience the effort involved in obtaining satisfactory photographs of living birds. In this connection it would seem as though the plate captions could easily have been placed on the plates and thereby obviated the need of having to refer to the list of captions in the back of the book. The interpolation of the plates in the text, adjacent to the accounts to which they pertain, is a very handy arrangement.

We congratulate Mr. Bent upon the success which he has attained in his initial volume and trust that further contributions of like or greater merit may be forthcoming in the not distant future.—TRACY I. STORER.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

AUGUST.—A special meeting of the Northern Division was held on August 13, 1919, at eight P. M., to meet Dr. Witmer Stone of Philadelphia. The meeting was called to order by the President, Dr. Evermann. Since no objection was offered by members present, the regular meeting for the month of August was declared omitted. Members present were Mesdames Allen, Griffin, Grinnell, Kelly, Pringle and Roe; Messrs. Bell, Carriger, Coggins, Evermann, Grinnell, Labarthe, Mailliard, Martin, Storer, and White. Visitors were Mrs. Coggins, Mrs. and Miss Evermann, Miss Potter, Dr. and Mrs. Stone, Mrs. Swarth, and Mrs. Wilcox.

Mr. Arthur Brown, 359 Monadnock Building, San Francisco, and Miss Josephine Geiselhart, Concord, California, were elected to membershhip in the Club. Elections by the Southern Division in April and May were ratified. Mr. W. Otto Emerson, Palm Cottage, Hayward, and Mrs. Mary Ames Van Dyke, 1545 LeRoy Ave., Berkeley, were proposed for membership, the former, by Mr. Carriger, the latter by Mr. Storer. Dr. Evermann reported that a letter from the manager of the Union Oil Company promised prompt installment of machinery to prevent its discharge of oil on the waters of the Pacific. The Secretary of the Club was instructed to request the committee on the licensing of cats to present a report at the next meeting.

Mr. Joseph Mailliard read a series of letters from Dr. F. M. Chapman relating to memorials for Col. Roosevelt or Mr. William Brewster. The following committee was appointed, Joseph Mailliard, Joseph Grinnell and H. W. Carriger.

Business disposed of, the Club was privileged to listen to a most interesting account of Dr. Stone's experiences in the Chiricahua Mountains, in southeastern Arizona. Of the seventy-five or more species mentioned by Dr. Stone fully a third were unfamiliar to the average California ornithologist. Meeting adjourned.—AMELIA S. ALLEN, *Secretary.*

SEPTEMBER.—The September meeting of the Northern Division was held at the Museum of Vertebrate Zoology on the evening of the 18th, at eight o'clock. In the absence of Dr. Evermann, Mr. Labarthe, the Vice-president, presided. The members present were: Mesdames Allen, Blake, Bridges, Davidson, Griffin, Grinnell, Gunn, Kibbe, Pringle, Roe, Thompson, and Wythe, Messrs. Bassett, Bell, Bryant, Carriger, Dixon, Grinnell, Hunt, Kibbe, Labarthe, Lastreto, Moffitt, Morley, McLean, Noack, Palmer, Storer, Swarth, White, and Wright. Visitors present were: Mesdames Ames, Bassett, Bryant, Mann, Raphael, Rose, Storer, Swarth, Thompson, and Wilcox, and Mr. Blake.

The minutes of the August meeting of the Northern Division were read and approved, and the June, July and August records of the Southern Division were read. Mr. W.

Otto Emerson, and Mrs. Mary Ames Van Dyke were elected to membership. July and August elections in the Southern Division also were ratified. Mrs. Kelley proposed the name of Mrs. E. C. Pitcher, Hayward, and Miss Davidson proposed Miss Elizabeth Hendren, Occidental, California.

Mr. Kibbe, the sole surviving member of the committee on the licensing of cats, then reported the results of the investigations of this committee and recommended that action be confined to an attempt to amend the city ordinances as they apply to the licensing and impounding of dogs, by inserting the word "cat" or "cats". A motion made by Dr. Grinnell and seconded by Dr. Bryant provided that the report and recommendation of the committee be adopted by the Club, and that the committee be given broad powers to proceed in its efforts to get the amendment adopted by the City Council. The motion was carried. A motion by Mr. Lastreto, seconded by Mr. Carriger, that the committee be discharged with thanks, that a new committee be appointed, including Mr. Kibbe as one of its members, to carry out the recommendations of the former committee, was lost.

Dr. Bryant then entertained the Club with an account of how six adults and two babies went, with the help of four packhorses, "A-Birding Down the Backbone of the Sierra", from the region of Lake Tahoe to Yosemite Valley. Photographs and specimens helped to make more vivid the wonderful experience such a trip affords to the enthusiastic ornithologist and mountaineer. —Amelia S. Allen, *Secretary.*

October.—The regular meeting of the Northern Division was held at the Museum of Vertebrate Zoology the evening of October 16, 1919. As both the President and the Vice-President were absent, Dr. Grinnell was called upon to preside. The following members were present: Mesdames Allen, Bamford, Bridges, Davidson, Kibbe, Pringle, and Wythe; Messrs. Bryant, Carriger, Dixon, Grinnell, Hunt, Kibbe, Little, Mailliard, Morley, Storer, and Swarth. Visitors were Miss Mackay, Mrs. Mead, Miss and Mrs. Swarth.

The minutes of the September meeting of the Northern Division were read and approved. The September minutes of the Southern Division were read by title only. Miss Elizabeth Hendren, and Mrs. E. C. Pitcher, were elected members of the Club. Elections of September 28 of the Southern Division, namely, of Richard Harlow, Joseph T. Greenleaf, Jr., James Haynes Hill, Loyal Edgar Smith, A. C. Johnson, and Mary Cheney, were ratified. New names proposed were as follows: Miss Isabel Ames, San Francisco, by Dr. H. C. Bryant; Mrs. Rowland B. Dodge, Berkeley, by Dr. William F. Badé; Mr. Lyle R. Fletcher, Norton, Kansas, by Mr. H. W. Carriger; Francis Harper, Biological Survey, Washington, D. C., by Mr. Alexander Wetmore; Mr. H. M. Harrison, Cambridge, Maryland, by Mr. H. W. Carriger; Miss Susan Mackay, Berkeley, by Mrs. J. T. Allen; Mrs. Edwin B. Mead, Berkeley, by Mrs. J. T. Allen; Mrs. Ernest B. Price, Piedmont, by Miss Margaret W. Wythe; and Raymond Wheatley Moore, Washington, D. C., by Dr. Joseph Grinnell, on behalf of Dr. T. S. Palmer and Mrs. Vernon Bailey.

The paper for the evening was presented by Professor S. Griswold Morley on the subject "Dogs, Birds and Humanity", and dealt with fundamental problems connected with human interpretation of animal behavior. The discussion which followed resulted in an agreement that more general banding of birds might produce evidence sufficient for deciding many moot questions such as that regarding a permanent marital tie among birds. Many seasonal observations were reported before the Club adjourned.—Amelia S. Allen, *Secretary.*

SOUTHERN DIVISION

September.—Regular monthly meeting of the Southern Division was held at 3 P. M., September 28, at the home of Dr. L. H. Miller, 6066 Hays Ave., Los Angeles. Twenty-four members and four visitors were in attendance.

Minutes of the August meeting were read and approved. On motion by Dr. Rich, seconded by Dr. Esterly, the persons whose names were proposed at the previous meeting were declared elected. New names were: Miss Ruth A. Ledeg, Los Angeles, by Dr. L. H. Miller; Richard F. Williams, Upper Montclair, N. J., by W. Lee Chambers; Chas. F. Hedges, Miles City, Mont., by Aretas A. Saunders; Mrs. W. L. Brownlee, Los Angeles, by L. E. Wyman; also two from the Northern Division.

The invitation of Mr. W. Leon Dawson to hold the October meeting at the Museum of Comparative Oology, in Santa Barbara, on the 25th of that month, was accepted on motion by Dr. Rich, seconded by Dr. Esterly. Mr. Law, one of the Business Managers of the Condor, who plans to make Berkeley

his home, asked authority to change the mailing address of the CONDOR from Hollywood to that city. His motion to this effect, seconded by his fellow business manager, Mr. Chambers, was carried.

Different members who have been in the field recently were then called upon. Mr. Law related some of his experiences in the Chiricahua Mountains, Arizona, where he had spent several months. Mr. Howell told of a trip up the coast and into southern Oregon, in the course of which he visited breeding colonies of petrels on an island near Crescent City, and had the Oregon Jay as a guest at his table and alighting on his head.

Formal matters disposed of, members and friends applied themselves to the less formal task of caring for the refreshments set before them by Dr. and Mrs. Miller. An hour spent in this way and in general sociability completed the meeting, which was declared by all to have been a most enjoyable occasion, and the hope was expressed that with each such occasion the worthy hosts would consider the custom more firmly established than before. Adjourned.—L. E. WYMAN, *Secretary.*

OCTOBER.—Regular monthly meeting of the Southern Division, was held at the Museum of Comparative Oology, Santa Barbara, October 25, 1919, at the invitation of the Director and Trustees of that institution. The meeting was preceded by introductions to twenty or more members of the Museum corporation, with whom the Cooper Club members enjoyed an excellent supper and social hour before the formal Club meeting. In the absence of both presiding officers Mr. Dawson was acclaimed chairman of the meeting. Other members present were Messrs. Badger, Brouse, Colburn, Daggett, Gilman, Hanna, Hanaford, Nokes, L. G. Peyton, S. B. Peyton, Reis, Rittenhouse, Taylor, and Wyman.

Minutes of the September meeting were read and approved. Applicants whose names were presented at that meeting were declared elected, on motion by Mr. Daggett that the Secretary be instructed to cast a favoring vote. The name of Louis E. Hoffman, Los Angeles, sponsored by Dr. L. H. Miller, was presented for membership.

The Chairman then called upon such visiting members as had collected oologically to relate the experience that yielded the most valuable sets of eggs, was the most difficult, or the most dangerous, and responses received proved highly entertaining. Motion by Messrs. Daggett and Taylor, seconded by Dr. Nokes, that a vote of thanks be extended to Mr. Dawson and the Museum of Comparative Oology for the warm reception tendered the visiting Club members, was carried, and the meeting adjourned to inspect the most excellent collection of eggs and nests housed in that Museum. Adjourned.—L. E. WYMAN, *Secretary.*

NOVEMBER.—Regular monthly meeting of the Southern Division was held at the Museum of History, Science and Art, at 8:00 P. M., November 25. President Miller was in the chair, with other members present as follows: Messrs. Appleton, Brown, Colburn, Daggett, Howell, Law, Nokes, Rich, Robertson, Stivers, Van Rossem and Wyman; Mrs. J. E. Law, Mr. Ross and Mrs. Nokes were visitors.

Minutes of the October meeting were read and approved. Mr. Louis Hoffman, whose name was presented at that meeting, was elected to membership. New names presented were: Roland C. Ross, Pasadena, by L. H. Miller; Howard C. Illo, Los Angeles, by A. E. Colburn; N. Hollister, National Zoological Park, Washington, D. C., by A. B. Howell; Mrs. Milicent H. Lee, El Cajon, by Frank Stephens; Guffing Bancroft, San Diego, by A. M. Ingersoll; Griffith McClelland Dings, St. Louis, Mo., F. R. Cole, Palo Alto, John Williams, St. Marks, Fla., and Benjamin Adams, Brooklyn, N. Y., by W. Lee Chambers. The following names were received from the Northern Division: Mary Ames Van Dyke, Theodore C. Frye, and W. Otto Emerson.

A letter from George Willett, wintering on Prince of Wales Island, was read by the Secretary. This was of special interest, as that locality has hardly been touched ornithologically, and specimens and notes obtained by Mr. Willett should prove of unusual value. The matter of continuing the custom established several years ago, of exhibiting a series of birdskins at each meeting, was brought up by Dr. Rich. It was the concensus of opinion that these exhibits were a valuable feature of the meetings and that they should be continued.

In the general discussion that followed the formal meeting, field observations were presented by Mr. Law, Dr. Miller and the Secretary. All observers seemed to agree that a most unusual movement of birds is under way and that the winter will produce many new records. Adjourned.—L. E. WYMAN, *Secretary.*

For Sale, Exchange and Want Column.—**Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. Lee Chambers, *Eagle Rock, Los Angeles County, California.***

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Collectors of bird and mammal skins often discard body skeletons of intrinsic scientific value which could be saved with little additional expenditure of time. The department of osteology of the Museum of Vertebrate Zoology solicits rough dried skeletons of any of the rarer species. Particularly desired at the present time are skeletons, whole or in part, of Wild Turkey, Prairie Chicken, Sage Grouse, Chachalaca, Ipswich Sparrow, Gyrfalcon (any), etc. Correspond with J. Eugene Law, *Curator in Osteology, Museum of Vertebrate Zoology, Berkeley, California.*

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Volume XXII March-April, 1920 Number 2

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THE NESTING HABITS OF THE ALASKA WREN

By HAROLD HEATH

WITH THREE PHOTOS

THE GROUP of birds that among others includes the common wren of Europe and the American winter wren is widely distributed throughout the northern hemisphere; and considering its extensive range the amount of geographical variation it displays is remarkably small. Extending from eastern Siberia through China, Japan and the Kuriles, it becomes differentiated into seven closely related island races that constitute a connecting link with the North American mainland representatives. Without going into detail concerning the distribution of these seven races it may be said that geographically speaking the Unalaska Island representative holds a central position with three races occupying distinct, isolated positions along the Aleutian chain to the westward; while to the eastward, within a somewhat shorter distance, we find the birds of the Semidi and Kodiak islands. The home of the Alaska or Pribilof Wren (*Nannus troglodytes alascensis*) is two hundred miles to the north.

The birds of Unalaska Island and the races to the westward appear to be closely allied. Those of the Semidi Islands, on the other hand, are not as intimately related to the Unalaska form as they are to the subspecies inhabiting the Andreanoff archipelago two hundred miles or so to the westward of Unalaska. Still more remarkable is the position of the Kodiak Wren that intergrades with the Pribilof type nearly seven hundred miles away. This last named subspecies also shows a close resemblance to the wrens of the Andreanoff group, four hundred miles distant across the waters of Bering Sea.

With these data[1] in mind it is interesting to consider a statement persistently made by some of the Aleut population of St. George Island. It is an unquestioned fact that the number of wrens on this small, three-by-eight mile mass of rock undergoes very material fluctuations from time to time. In one year as many as forty pairs have been noted by these sharp-sighted, active observers, and it is said to be equally true that during at least two summers, separated by considerable intervals of years, not a single wren has been observed.

[1]Derived from Harry C. Oberholser's paper, "Notes on the Wrens of the Genus Nannus Billberg": Proc. U. S. Nat. Mus., vol. 55, 1919, pp. 223-236.

The explanation offered to account for the restocking of the island is that there are occasional migrations, small perhaps, but existent nevertheless, of birds from the Aleutian chain. Now there are certain difficulties in the way of accepting such a bit of evidence. If the Pribilof Wren remains the same from decade to decade, then the immigrants in question must come from distant Kodiak as all of the other races are distinct. It is true that each year land birds of other species, lost in the fogs or blown out of their course by storms, make their way to the Pribilofs; but in the present case, neglecting the tax on the bird's physical powers, one cannot conceive of such a delicate adjustment of the forces of nature whereby a few inhabitants of a very circumscribed area are driven into an equally well defined and devastated region at exactly the proper time.

A more reasonable explanation is that, even in the most severe winters, or when foes are more than usually abundant, a few individuals are preserved.

Fig. 7. Nesting site, indicated by arrow, of Alaska Wren; St. George Island.

This past year is a case in point. The winter of 1919 was the most severe in fifty years, and at the instigation of Dr. G. Dallas Hanna, naturalist of the fur seal herd at that time, a very careful search was made of all of the islands of the Pribilof group. Just one pair of wrens was seen along the south coast of St. George Island, and, though a most tenuous thread, it is to be hoped that this pair may unite the past with an extensive future population.

Until recent years the wrens on the Pribilof Islands were strictly limited to the island of St. George. In 1915, however, six individuals were observed by Dr. Hanna on St. Paul Island, and of these, three were secured. None, so far as I now recall, have since been noted there, but in the summer of 1918 a considerable number were seen on Otter Island, a small body of land four miles to the southward. In the summer of 1917 I noticed two individuals near the village of St. George, but owing to lack of time no attempt was made to study

their habits. In the year 1918 it was my good fortune, while investigating certain features of the fur seal herd, under the auspices of the Bureau of Fisheries, to be stationed on the island of St. George during the greater part of May and the first half of June. An unusual number of wrens were seen about the village during this period, and when time permitted were watched with more than usual interest. The more important results of the investigation are recorded in the following paragraphs.

Throughout the summer at least, these diminutive creatures confine their activities to the perpendicular cliffs and the adjacent boulder-strewn beach where they prove to be more than usually inconspicuous, for several reasons. In the first place their brownish coats harmonize almost perfectly with the weathered basaltic rock and the encrusting lichens, and this, together with their habit of slipping along the face of the cliff by very short flights, or moving mouse-like through the grass, or entering crevices of the cliff or beneath the beach boulders to appear again several feet distant, renders it most difficult to follow their movements for many minutes together. Also, during the month of May and the first half of June—the length of my sojourn on St. George Island—the weather was anything but ideal. Rain, dense fogs, or at least heavily overcast skies, with piercing winds and a temperature of not over fifty degrees, placed a heavy tax on one's powers of endurance and eyesight. Furthermore, the almost incessant incoming and outgoing stream of least, crested and paroquet auklets interspersed with kittiwakes, puffins and murres, and the movements of these species on the cliffs, produce a bewildering effect which tends to blot out minor details. However, as I shall now attempt to show, there are a few fairly distinct periods during the breeding season of this wren when its movements are so definite and regularly repeated that the discovery of the nest is a comparatively easy task.

During the winter, when the voices of other birds are stilled and the sound of the surf is muffled by the ice, the song of this hardy northerner can doubtless be heard in its entirety, and is declared by Mr. Henry Elliott to be of a highly agreeable, cheery character. In the summer, on the other hand, the lower or at least the weaker notes are usually lost amid the general uproar, and the resultant effect bears a strong resemblance to the creaking of a non-lubricated and rapidly pushed baby buggy. It is cheery only insofar as it indicates that a nest is or will be built within a thousand feet; for each pair of these birds clings tenaciously to a fairly definite beat.

At the outset be it known that the male is almost utterly useless when depended upon to disclose the presence of the nest, until after the young are hatched. In carefree fashion he explores the cracks and crannies of the cliffs for half-frozen bugs and flies, or repairs to a commanding position at the upper margin of the cliff, where he delivers himself of his unoiled song; or tiring of this he flies a quarter of a mile or so along the coast to sneak back a few minutes later to the same old stand. In three instances only, have I seen the male fly to the neighborhood of the female or the nest during the building or incubation period, and his stay in every case was of brief duration.

During this time the female may or may not be in evidence, and if discovered her activities are usually found to be essentially the same as those of her mate. If so—and an hour's watching will generally settle the matter—it is economy of effort to postpone the search for the nest until the morrow. How-

ever, if the female is in the midst of house building, no better time can be found to locate her nest for, in spite of intruders, even at a distance of a few feet, she works with feverish activity and with a directness of flight that can scarcely escape the observation of even an untrained eye. Nevertheless, this period of construction is frequently interrupted by flights to the beach or along the cliff in search of insects, or for a period of song on some lofty point, or she too may dash out of sight far up the coast to return after a period of from five to thirty minutes.

Another favorable time for the location of the nest is during the incubation period. Four nests under observation showed that the female remains

Fig. 8. Nest of Alaska Wren; about one-half natural size.

upon the eggs, whatever the character of the day or the stage of incubation, for a period ranging from eighteen to twenty-one minutes. She then feeds from two to five minutes. Here also her flight is relatively direct, in marked contrast to her usual journey along the cliffs, and is unmistakable after a brief experience. The recorded habits of several other birds indicate a fairly definite daily program during the breeding season, but, so far as I know, none are so timed to the minute as the Alaska Wren.

All of the nests discovered in 1918 were in the faces of cliffs anywhere from twenty-five to one hundred feet in height, and were placed at elevations

varying from eight to one hundred feet. The spot chosen may be a crevice between shattered blocks of rock, or in a small blowhole in the ancient lava flow, or, more frequently, underneath banks of moss where rain and frost have excavated cavities of tidy size. In three instances the nesting site had been chosen the year before, the new nest being built upon the remains of the old one. In my experience the nest is never hidden far beneath the general surface of the cliff. Of twelve nests described in my field notes four were plainly visible, while the others were merely concealed by an overhanging fringe of grass or moss or by a few small shattered scales of rock. Four other nests were placed in cracks at a considerable elevation and in overhanging cliffs that effectually prevented a close examination.

The nest of the Alaska Wren is indeed a work of art, with the materials composing it bearing a definite relation to the nature of its surroundings. Generally speaking, it is a globular, more or less bulky affair with the entrance at one side. When situated in a lava bubble or in cavities where the adjacent rock is relatively dry, it usually consists of an external sheath of moss, thick or thin, according to the size of the space to be filled. Where the soil inclines to be soggy the roof alone is built of moss (at least in three instances) to absorb the moisture and prevent its precipitation upon the sitting female. Farther down, at the sides of the nest, it rests upon a meshwork of grass and roots that not only drains away the water from above, but permits of rapid drying. To determine the correctness of this theory a nest of this type was brought in from the field, and was left overnight under the slow drip from a water tap. The next morning the mossy roof was soaked and the grassy base adrip, but not a drop of water had made its way into the interior. While a nest of this construction operates satisfactorily during periods of intermittent rain it is altogether likely that the lining itself must eventually absorb moisture in excessively damp situations; whereupon it may be abandoned until a later time when the soil is free from ice and the temperature is higher.

The lining of the nest forms a heavy feltwork of which delicate roots and a fine filamentous lichen form the chief constituents. With these are usually associated the feathers of the least auklet (and other birds to a less degree), fox hairs, and in late years, the hair of the reindeer. The long white hairs, found in the nest described by J. A. Allen[2], and believed to be those of the polar bear, were probably from the bleached-out winter coat of the blue fox that is shed in the spring. Those examined microscopically this year were all from this source; and besides, no polar bear has been known to have touched the shores of the Pribilofs, at least in recent years.

With the aid of a field glass one can usually determine more or less accurately the various stages of the nest-building process. Where the female is bringing in bits of moss or grass stems the external sheath is obviously undergoing construction, while feathers and fluffy bill-loads of lichen indicate the finishing touches. This period of restless activity on the part of the female finally comes to a close, and the quiet egg-laying season is ushered in. Never yet have I seen either the female or the male about the nest during the week when the eggs are being laid, and in most cases they are seemingly absent altogether, probably at some distant point along the coast.

In the majority of the nests examined this year the number of eggs laid

[2]Nest and Eggs of the Alaskan Wren, Bull. Nutt. Orn. Club, II, 1877, p. 82.

is seven. Six may be the complement. An Aleut patriarch told me that twelve eggs are the usual number, and the native who collected the nest described by Allen reported the same; but in view of the fact that but two eggs were saved of this clutch it is evident that conclusive proof of such an excessive number is lacking. On the other hand a young, intelligent native boy told me that he had examined several wren's nests during the past ten years, and had never found more than seven eggs or young. Furthermore he reported that in olden times the natives could not count accurately, and that when they used the number twelve (learned from sailor-men) it merely meant a considerable number and was not definite. It may be added that Dall, in speaking of this wren, re-

Fig. 9. Eggs of Alaska Wren; natural size.

ports that "according to the Aleuts, it lays six eggs".

As noted by Allen, the eggs are white with a slight gloss, and are more or less peppered with reddish dots. These markings are described as being "so few and small as to be easily overlooked", but this is certainly not the rule. The set shown in the accompanying figure (kindly photographed by my friend and colleague, Prof. R. W. Doane) may be considered typical, and, as indicated, the spots are clearly in evidence on every egg. The average size of thirteen eggs is 17 mm. by 13 mm. The largest is 18 mm. by 14 mm., while the smallest measures 14 mm. by 13.5 mm.

As nearly as I can judge from one pair of wrens, the period of incubation lasts eleven days, and the young in this same nest were fed for twenty-two days. When the eggs are hatched the male abandons his usual haunts, and with his mate collects insects from foggy morn to yet more foggy eve. When this brood is dismissed a second one may be reared the same season. In 1918, for example, Mr. E. C. Crompton, government agent on St. George, reported to me the discovery of a nest that was left by the young about the middle of July. During the following week the female deposited a second set of eggs.

Such in brief, is the biography of the Alaska Wren, otherwise known in native parlance as the "limmershin" or chew-of-tobacco. A veritable pigmy he is when compared with other species comprising the feathered hordes that repair to the cliffs of St. George Island; but none battles more valiantly with the elements, or labors with greater industry, or contrives with a higher degree of cunning to protect his home, than does this tiny denizen of the frozen north. "May his tribe live long and prosper".

Stanford University, California, February 6, 1920.

AUTOBIOGRAPHICAL NOTES

By HENRY WETHERBEE HENSHAW

(*Continued from page 10*)

TRIP THROUGH THE NORTHWEST IN CONNECTION WITH THE TENTH CENSUS

IN THE FALL of 1880 and the spring of 1881 I made an extensive trip through the northwestern states and visited all the Indian reservations in Utah, Nevada, Idaho, Oregon, Washington, and California in connection with a census of the Indian tribes, which had been put in charge of Major Powell. He saw in it much more than the opportunity to obtain an accurate enumeration of the Indians of the United States, and expected to secure important information on the present status of the tribes, their advance in civilization and education, their future needs, and much ethnologic and anthropologic data for study and publication. A large amount of miscellaneous information was in fact gathered on carefully prepared schedules, but lack of funds prevented its ultimate elaboration into published form.

AM ARRESTED AND FINED

While in Oregon an amusing incident occurred by which I fell into the clutches of the law, the first and only time in my long experience as a bird collector. Being detained in Albany, Oregon, for a few days because of a flood which interfered with the operation of the stages and railroads to the south, I employed an hour's leisure in collecting a few birds on the outskirts of the town, by no means so large then as now. Fate played me a sorry trick by leading me to collect a number of curious looking Shore Larks directly in front of the house of the constable, who proceeded to instill the fear of the law into my heart by a fine of ten dollars. As, however, the birds subsequently proved to

be the types of a new form (*Eremophila alpestris strigata*) I have always considered that I got the worth of my money.

VISIT CALIFORNIA DURING THE EIGHTIES

Several times during the eighties I visited California in pursuit of data on Indian languages, with particular reference to the making of a linguistic map of North America, which I had planned and been put in charge of, and which, with the assistance of the several members of the Bureau, was completed and published in 1885. The work on this map proved extremely interesting and occupied much of my time for two or three years.

TRIP TO COLORADO AND THE PECOS RIVER, NEW MEXICO, IN 1883

In May, 1883, I obtained leave of absence for several months on account of ill health, and spent the time till the middle of July near Colorado Springs. Here I was joined by E. W. Nelson, also in search of health, and we made a fine collection of the birds of the locality.

In June the Mountain Plover was found to be nesting in great numbers on the plains near us, and after some unsuccessful attempts at nest hunting, we hit upon an easy method of finding plovers' nests which is, perhaps, worthy of record. Like many other great discoveries, it was simple enough, consisting of driving in a buggy over the plains, then unfenced, and at long range noting with a glass the plover, as they stood upright over their eggs, their wings slightly raised, too much bewildered by the strange apparition invading their homes to put into practice their usual cunning tactics. By means of this device, in a few hours, we found all the plovers' nests we desired and, incidentally, a still greater number of nests of the Prairie Horned Lark, which inhabits the same waterless plains.

On July 18, we transferred our activities to a camp on the upper Pecos River, New Mexico, at its junction with Willow Creek, and there I remained till October 28, when I set out for Nevada and California, leaving Mr. Nelson still in camp. This mountain locality proved very interesting from the standpoint of the bird student, and the collections and observations made here formed the basis of an article by me in *The Auk* for October, 1885, and January, 1886.

MY COLLECTION OF BIRDS ACQUIRED BY THE BRITISH MUSEUM

In 1885 my entire private collection of birds and eggs was acquired by the British Museum, where it now is. Its value had been greatly enhanced by the addition of the Merriam collection, made chiefly about Locust Grove, New York, and the Nelson collection, consisting largely of a series of the Alaskan birds gathered by him while at Saint Michaels. In addition to greatly strengthening the British Museum series of North American birds, till then comparatively weak, it enabled British Ornithologists to comprehend the significance of the trinomial system as applied on this side of the water. Its value abroad, too, was greatly enhanced by the fact that many of the species were represented by strong series well illustrating geographic variation. While the collection thus became inaccessible to American ornithologists, I have always felt that its value to science was far greater abroad than it ever could have been here, where, more recently, many even larger collections have been made along similar lines.

The following quotation from Sharpe's "History of the Collections of the

Natural History Department", vol. II, 1906, will show its importance as viewed through British eyes:

"The Henshaw Collection, consisting of 13,326 specimens, [including eggs], with three types and thirty species new to the Museum.

"This fine collection was purchased and given to the British Museum by Dr. Godman.

"Many American ornithologists have told me that they are glad that we have the Henshaw Collection in England, and the advantage to students of Ornithology has been simply incalculable. Before this time there could not be said to be *any* collection of North American birds worthy of the name in England, but since Dr. Godman acquired the Henshaw Collection we have been able to comprehend and appreciate the work of our American colleagues in a manner before impossible, and the advantage to the writers of the 'Catalogue of Birds' cannot be over-estimated.

"An act of courtesy on the part of the authorities of the United States National Museum deserves grateful recognition. Professor Ridgway was permitted to devote his time to the identification of the specimens with Mr. Henshaw, so that the collection when it arrived was found to be not only completely and neatly labelled, but the names attached to the species represented the most recent conclusions of American naturalists. These determinations have proved to be of immense advantage to English ornithologists."

THE AMERICAN ORNITHOLOGISTS' UNION

The American Ornithologists' Union was founded in 1883, when I was absent in the far west, and I had nothing to do with its formative period. On my return I learned of my appointment on one of its important committees, which was charged with the preparation of a Code of Nomenclature and Check-List of North American Birds. I continued a member of the committee for several years, or until I left for the Hawaiian Islands in 1893. After numerous meetings and much research and discussion the results obtained by the Committee were embodied in the A. O. U. Code of Nomenclature and Check-List of North American Birds, of which three editions, with many changes and emendations, have been published to date. The issuance of the code was timely, and it has undoubtedly exerted great influence in nomenclatural matters not only in this but in other countries.

Though I have been a member of numerous scientific societies, I have taken little active part in any, except perhaps the Anthropological Society of Washington for a few years; and this failure has been due less to a lack of interest than to an innate dislike to public appearance and to the delivery of papers, never wholly overcome.

I served on the Council of the A. O. U. from 1883 to 1891, and as Vice-President from 1891 to 1894 and from 1911-18. I also served on a special committee to revise the Code in 1907-1908. At the beginning of 1919 I resigned from the Vice-Presidency and from the list of Fellows and at my request was placed on the list of Retired Fellows, which was formed, as I think wisely, for the purpose of making room for the younger and more active men of the Union.

VISIT TO LOCUST GROVE, NEW YORK

In August of 1885 I spent a week or more with Hart Merriam at his father's home in Locust Grove, New York. The house was beautifully located upon

a forested hill, and commanded a fine view of the distant Adirondack Mountains, with the fastnesses of which Merriam became acquainted as a boy, and which later inspired his "Mammals of the Adirondacks", one of the most notable books of its kind ever published in this country. The location of Merriam's home and character of the surroundings were well calculated to stimulate and gratify a love of nature, and to afford unlimited opportunities to the naturalist.

ACQUAINTANCE WITH FLORENCE MERRIAM

Florence Merriam, now Mrs. Vernon Bailey, though she had begun her college course, was then at home; but her footsteps were not yet fully set in the path which later was to bring her fame and make her so widely known as a successful author of bird literature. She was familiar with the local species about her home and ever ready to act as guide to the haunt of any desired bird, but, although much interested in her brother's collections, her personal predilections were for the study of the living bird over the stuffed specimen, and she was ever alert to urge the advantages of this method of study as against the less humane use of the shot-gun. Though a late, I am a sincere, convert to her creed, so far as my personal practice goes, and for a number of years I have found it impossible to kill birds, or, indeed, to take the life of any living creature. I believe that sentiments akin to these are rather common among naturalists and even sportsmen who are no longer young. As the end approaches, one is better able to appreciate the value and significance of life, of whatsoever form, and to desire to cherish rather than destroy it.

VISIT DR. FISHER AT SING SING, NEW YORK

On our way back to Washington, Dr. Merriam and I stopped for a day or two at Sing Sing to visit Dr. A. K. Fisher, where began another enduring friendship. Dr. Fisher was then engaged in making his fine collection of local birds.

The division of ornithology of the Agricultural Department had been created July 1st of that year (1885), under the charge of Dr. Merriam with Dr. Fisher as assistant, and in the following November the work was transferred to Washington when both men became permanent residents of the city. For many years Dr. Fisher and I in our spare time collected birds in and around the District of Columbia.

TAKE UP THE STUDY OF ROADSIDE BOTANY

One can hardly study birds, even in a casual way, without desiring to know something of the surroundings amid which they are found, and the bird lover is pretty sure, sooner or later, to become something of a botanist. In the late seventies in Washington, being possessed of a good driving and riding horse, I took up the study of roadside botany with much enthusiasm, and soon acquired a speaking knowledge with all the trees and shrubs of the District and adjoining country. Later I made collections of ferns, asters, and golden rods, and became reasonably familiar with these difficult groups. Study of the two last-named families took me several times to the Cambridge Herbarium where I found Dr. Asa Gray wonderfully kind and helpful.

While I was not unfamiliar with Gray's Manual, I found that the readiest means of acquiring botanical lore, as well as the pleasantest, was to take with me on my drives a skilled botanist. Professor Lester F. Ward was then preparing the first edition of his "Guide to the Flora of Washington and Vicinity",

which was published in 1881 as Bulletin No. 22 of the National Museum, and many were the drives and tramps we took together in search of data for the forthcoming list of plants.

MEET DR. COOPER IN CALIFORNIA

Dr. Merriam and I chancing to meet in San Francisco in September, 1888, we called upon Dr. J. G. Cooper, then practising medicine in Haywards, Alameda County. We found him still hale and hearty, and, although he had long ceased to busy himself actively in the study of birds, he still retained much interest in the subject, and gave us many interesting details of his work done in former years.

BECOME EDITOR OF THE AMERICAN ANTHROPOLOGIST

The Anthropological Society of Washington was organized February 17, 1879, and in 1888 began to publish as its organ "The American Anthropologist" under the supervision of an editorial Committee of which I was one. In July, 1889, I became editor of the quarterly, and so remained till July, 1893. The journal has had a very prosperous career, has increased greatly in size, and has exercised a wide and important influence within its domain.

E. LORQUIN AND FERDINAND GRUBER

It may be of interest to some of the present generation to recall the names of two men, long identified with San Francisco, who, although not professed ornithologists, were well known as contributors of specimens to the science. Mr. E. Lorquin kept a bird store and taxidermist's place near Market Street, and on my visits to the city I used to call at his place and examine his stock with a view to detecting any rarities that might have fallen into his hands.

Ferdinand Gruber also kept a taxidermist's place down town, and had charge of the Woodward Zoological Gardens, which, with its live birds and mammals, formed an interesting place to visit, and was a not unworthy forerunner of the present day "Zoo" of which, indeed, it formed the basis. A small admission fee was charged, and it was very well patronized. Though not possessed of very exact or extensive ornithological knowledge, Mr. Gruber was enthusiastic on the subject of birds, and ready to impart any information he was possessed of. I remember he gave me a very fine skin of the Baird's Cormorant (*Phalacrocorax pelagicus respendens*), which up to that time I had not seen alive, but which subsequently I found to be common among the Santa Barbara Islands, and also along the coast. He died August 2, 1907, and at the time of his death was Curator of the Golden Gate Park Museum.

MEET MR. D. S. BRYANT AND WALTER BRYANT

Early in my visits to San Francisco, the exact year I cannot recall, I met Mr. D. S. Bryant, then a commission merchant of the city. He had made an excellent collection of mounted birds, and when, on his cordial invitation, I went to his house to see them I met his son, Walter E. Bryant, then a school boy, who already had begun to collect birds and birds' eggs, and to display the tastes which led him to become a naturalist. Later we did some collecting together at a place, near Oakland, called Stege's, and we also arranged an exchange of bird skins. The acquaintance with the family thus begun was continued for many years or until death claimed both father and son.

CALIFORNIA BIRD LIFE IN THE EIGHTIES

Though I did very little collecting during my visits to California in the

eighties, I never ceased to take a deep interest in its bird life, and in 1885 contributed to the *Auk* a short paper on the gulls of the California coast based on the observations made in November and December, 1884, chiefly in the vicinity of San Diego and San Buenaventura. Among the species collected were a number of *Larus brachyrhynchus*, then for the first time reported from California.

The west coast in those days was simply a paradise for water birds. Not only did the off-shore islands teem with gulls, terns, cormorants, pelicans, guillemots, auks, and oyster-catchers, most of which nested on them, but the shores in winter and during the migrations fairly swarmed with various species of shore birds. These were rarely or never disturbed by sportsmen, who found sufficient sport in the abundant larger game, as ducks, geese and brant. When, for instance, I first visited San Diego in the fall of 1880 its bay was fairly alive with water birds, especially brown pelicans, gulls, terns, and black brant. The latter were so numerous and so tame that they could be killed with what, to an eastern sportsman, would have seemed ridiculous ease. In the nineties, however, I found things had changed greatly, and the bay was almost barren of bird life.

Having once become somewhat familiar with the west coast from Washington to Lower California and become acquainted with its deep forests, its alluring mountain fastnesses, and its beautiful valleys, it became the Mecca of my aspirations, and I looked forward to the time when I should be able to devote some years of my life to a study of its varied ornithology and to the publication of one or more volumes on it. But in 1891 ill health, which continued for several more years, dispelled these dreams along with some others. This, however, I regret the less, as California has been exceptionally fortunate in the number and character of the men, many sprung from its own soil, who have taken up the work I dreamed of, and are carrying it on with marked zeal and ability. In their hands I am content to leave it, though not without an occasional regretful glance backward.

SPEND THE YEARS 1891-1892 IN CALIFORNIA

In 1891, as the result of an attack of grippe, my health gave way completely, and for a time I was unable to do work of any kind. I spent the years 1892, 1893 and 1894 in California, being chiefly engaged, when able to work at all, in the collection of Indian linguistic material for the Bureau of Ethnology. In 1892 I spent several months at Witch Creek, San Diego County, part of the time under the hospitable roof of Frank Stephens, the well known collector of birds and mammals. Here I collected several hundred birds, many plants for the National Herbarium, and a good many snakes and lizards, including the type of *Xantusia henshawi*, a pretty little nocturnal lizard. But in 1893 I was compelled to ask for an indefinite leave of absence.

(*To be continued*)

NESTING OF THE DUSKY POOR-WILL NEAR SAUGUS, LOS ANGELES COUNTY, CALIFORNIA

By A. J. VAN ROSSEM and J. HOOPER BOWLES

WITH ONE PHOTO

IT IS probable that the majority of us are acquainted with most of the Poor-wills, even within their regular ranges, mainly from their weird calls that come to us shortly after dusk. We consider ourselves fortunate if we are able even occasionally to flush one of the birds, and thus to obtain a fleeting glance or two as they disappear through the underbrush. Among their favorite haunts seem to be the sides of canyons where there is a heavy growth of wild lilac and white sage; and it was in such a locality that A. J. van Rossem was fortunate enough to discover the nest and eggs that are described in this paper. As is not infrequently the case with some of our best finds, the collector was not even thinking of birds at the time, being in hot pursuit of a rare butterfly instead. Dashing through the thick brush he nearly stepped upon the sitting bird, which flushed from her eggs almost between his feet. As was natural enough, the butterfly continued down the canyon unmolested, and the ardent entomologist, upon retracing his steps to the spot where the bird had made its unexpected appearance, was promptly transformed into a most enthusiastic oologist.

No attempt whatever seemed to have been made at constructing a nest, the eggs lying on the bare ground among pebbles, etc., in the shade of some dense brush that bordered upon a small open space, as may be seen in the accompanying illustration. Only one of the parent birds was in evidence and, after flushing from her eggs, she returned twice while van Rossem was at the nest. The date was April 18, 1919, at which time the incubation was only slightly advanced. This is much the earliest of any set that we have been able to find recorded, June and early July being dates for the very few previously taken.

This set of eggs of *Phalaenoptilus nuttalli californicus*, two in number, was sent unblown to J. Hooper Bowles, of Tacoma, Washington, in whose collection it is at the present writing. A good supply of the materials upon which the eggs were laid accompanied them, for nothing shows off a set of eggs in a collection to better advantage than the materials upon which the bird placed them. This is always true from a scientific viewpoint, and usually from an artistic point of view as well.

In a majority of the descriptions that are given for eggs of the various forms of the Poor-will, the color is stated as white, without markings, sometimes with a pinkish tinge. However, such was by no means the case with the set of eggs under discussion. Before blowing, the ground color was a strong salmon pink; but this, after blowing, turned to a clear, glossy, pinkish white, strongly suggesting eggs of the Merrill Parauque (*Nyctidromus albicollis merrilli*), although the pink of the Poor-will eggs showed a closer approach to salmon. Around the larger ends was a rather dense wreath of lavender and dusky spots and dots, making the eggs look exceedingly like the marked eggs of some small petrel. In fact that is what the present owner thought they were at first.

as the box was opened before the explanatory letter arrived for reading. It will always be a matter for regret that the eggs were not photographed soon after blowing, as in the course of time many of the smaller dots have faded out, leaving only a comparatively few spots and dots to show where the heavy wreath was once located. The strong pinkish tinge has also very largely gone, in spite of the fact that the eggs have been carefully kept from exposure to the light. However, in comparing them with such pure white eggs as those of the Stephens Whip-poor-will (*Antrostomus vociferus macromystax*), or eggs of

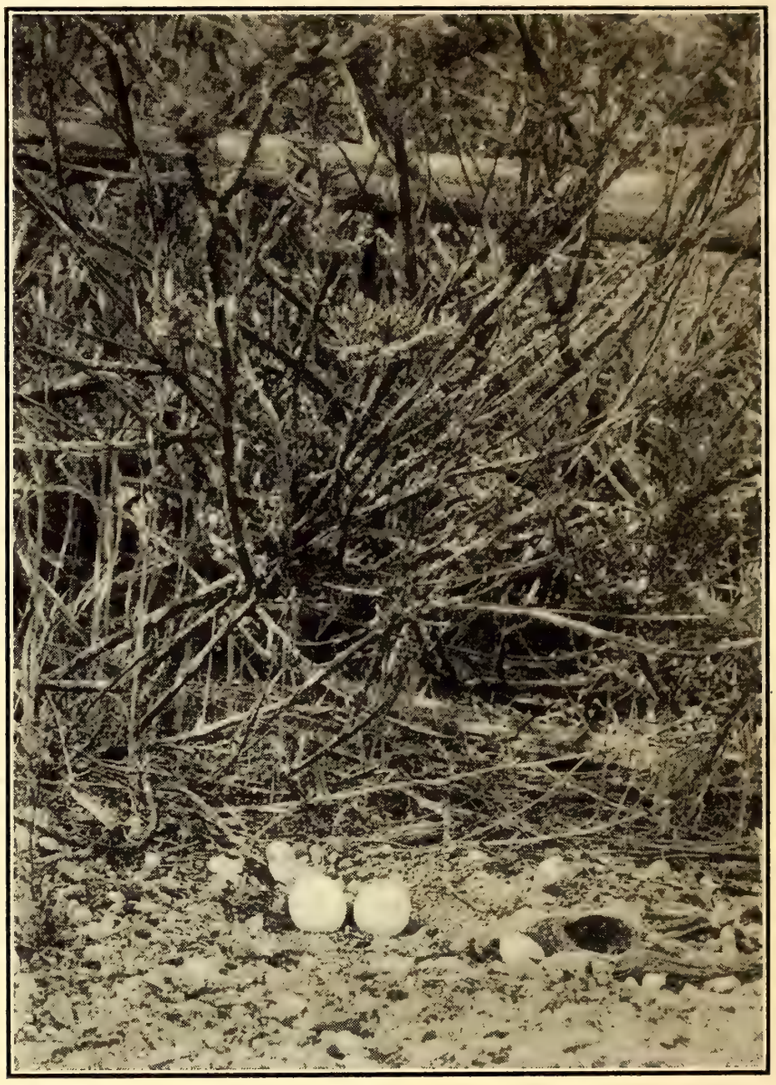

Fig. 10. Eggs and nesting site of the Dusky Poor-will.

any of the woodpeckers, the pinkish tinge is in marked evidence.

In shape the eggs of the Dusky Poor-will are a decided oval, almost equally rounded at the two ends, although the smaller egg comes to a very abrupt and small point. In dimensions this set of eggs measures in inches 1.05x.77 and 1.00x.76, being very much smaller than the eggs of any other goatsucker that nests within the borders of the United States.

Tacoma, Washington, December 13, 1919.

BRYANT MARSH SPARROW UPON THE HILLS

By JOSEPH MAILLIARD and JOHN W. MAILLIARD

WITH TWO PHOTOS

DUE probably to the lack of evidence to the contrary the breeding grounds of the Bryant Marsh Sparrow (*Passerculus sandwichensis bryanti*) have been generally assumed to be confined to salt marshes and their immediate vicinity, within a few feet of sea level. Of late years, however, reports have been coming in of sparrows of apparently this form that were found at elevations. An article drawing attention to this appeared among the notes "From Field and Study" in THE CONDOR for March, 1917 (vol. XIX, p. 69), in which the hope was expressed that the matter would be taken up by bird students and thoroughly investigated.

On account of this limitation of breeding ground a set of eggs taken by Chas. A. Allen on Black's Mountain, Marin County, California, on April 29, 1877, and identified by him at the time as that of the Western Savannah Sparrow

Fig. 11. SPRINGY SPOT, 400 FEET ELEVATION, ON TOMALES POINT, MARIN COUNTY, CALIFORNIA, WHERE THE BRYANT MARSH SPARROW WAS TAKEN IN THE BREEDING SEASON.

(*Passerculus sandwichensis alaudinus*) by the capture of the male parent, which he regarded as being of that form, was allowed to remain for many years without special investigation. Unfortunately Mr. Allen disposed elsewhere of the parent bird and it has not as yet been located, in spite of the request for information concerning it contained in the article above referred to; so that this record has always been considered unique, though unsatisfactory. The probable clearing up of this matter, as outlined below, has proved most gratifying.

On May 31, 1917, while on our way back from a trip to Tomales Point, which forms the southerly side of Tomales Bay, Marin County, California, and while still on the backbone of the ridge which tapers off into the point, several

Passerculus were seen by our party and five captured. These appear to be inseparable from *Passerculus sandwichensis bryanti.*

No further investigations were made by us until May 12, 1919, when a special trip was made to the same ridge, where many of these sparrows again were noted. Sixteen specimens were taken, all of them being identified as *bryanti.* Among these, three females proved to be either laying or about to lay, while one young male was scarcely more than a fledgling. Although no actual nests

Fig. 12. Black's Mountain, Marin County, California, on which the nest was taken by C. A. Allen, and on top of which Little took a Bryant Marsh Sparrow on August 9, 1919.

were discovered, such evidences of breeding in that locality seem practically beyond dispute.

On August 23, 1919, we again visited the ridge and many *Passerculus* were noted, the twenty-four specimens taken, including six juveniles, being identified as *bryanti,* as in the former cases.

This ridge runs parallel to, and the entire length of, Tomales Bay, from the shores of which it rather abruptly rises, in places to an elevation of 500 or

600 feet, terminating in Tomales Point, which forms the headland next above the well known Point Reyes. Except at the very head of Tomales Bay there is little or no marsh land at sea level, the water coming in close to the bluffs. At the commencement of this ridge an interesting growth of Bishop pine (*Pinus muricata*), under which grows salal (*Gaultheria shallon*) in great abundance, gives way to open tops as a rule, the canyons on either side being wooded, brushy, or both.

The open ground on the top is in places given over to patches of brush, and some large areas are covered by the yellow lupine which, at the height of blossoming, gives great charm to the landscape. Springs of water exist here and there, and in one of the areas where most of the sparrows were found there is quite a "cienaga", or marshy spot, even well into the summer. The accompanying photograph is intended to show the type of country in which this sparrow not only thrives, but apparently breeds. The estimated elevation of the locality shown in the photograph is about 400 feet, and the distance from the nearest salt marsh five miles.

On August 9, 1919, the ascent of Black's Mountain was made, and the presence of *Passerculus* established there, even on the summit. The only specimen actually secured was taken by Luther Little, at the time assistant curator of the Department of Ornithology in the California Academy of Sciences, and proved to be identical with the Tomales Point birds, as far as its worn plumage would allow us to judge. As this date presumably was too early in the season for the appearance of migrants it seems fair to conclude that this specimen is of the same form as that taken by Allen as parent of the nest above alluded to.

The photograph reproduced herewith will show the character of Black's Mountain, the altitude of which, by aneroid, is 1140 feet. Its distance from the salt marsh at Tomales Bay is about four miles.

We have carefully compared the specimens taken on these several occasions with many examples of the Bryant Marsh Sparrow from elsewhere, but can find no material differences. Special care has been taken with the measurements of these specimens, as well as with the many others examined from the San Francisco Bay, Santa Cruz and Humboldt Bay regions known to be *bryanti*. The measurements of the Tomales Point birds easily fall within the extremes of the groups from these other localities, and the averages are too close to amount to anything. The latter groups show some slight differences in their averages, as might be expected from the small numbers measured—from four to ten being arranged in each group according to sex, date and locality—but not enough to be taken into consideration.

In color and shading the individuals in each group differ among themselves to quite an extent, and vary a good deal with the time of year; but the specimens from Tomales Point cannot be distinguished, as far as we are able to determine, by any of these characteristics, from those from the other regions mentioned and which have been positively identified as *bryanti*. The only possible exception is in the case of three immature females from Santa Cruz, California, taken on September 3 and 4, which are rather deeper and more of a sort of reddish brown in shade than any of the Tomales Point birds, but they differ in this same way from any of our other examples as well, so it seems to be more a difference associated with stage of immaturity than anything else. Our latest Tomales Point birds were taken on August 23, but seemed older than

these September youngsters; the younger they are the deeper seems to be their shading.

During the season of 1920 we hope to be able to locate some nests of this species both on Tomales Point and Black's Mountain, and the readers of THE CONDOR may rest assured that they will be duly advised through its columns if success crowns our efforts.

San Francisco, February 2, 1920.

A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

(*Continued from page 26*)

IN THE SHELTER OF ISLAND LAKE

THE GEM of the Sweetwaters, to which the beautiful water fowl have learned to gather from far and near to raise their young, offers a rare opportunity for an ideal State Bird Refuge; but now, at the opening of the hunting season, from being a secure retreat where the birds are sure of peace and plenty, the lake becomes a center of bombardment, its hunting lodge opening on the most protected corner, where families were wont to gather on sunny afternoons to feed and rest. No wonder, then, that the good friend who first took me to the lake, an ardent bird lover who had long been working to protect the birds of the state, should suggest that, unable to prevent the desecration of this natural sanctuary, we should make a trip to the protected shores of Island Lake, near the Turtle Mountains, at the beginning of the open season.

As she told me, a Chicago man who had retained his boyish interest in the birds of the region, had bought fifty feet of shore line on a lake two miles long. Two years after he had completed his purchase, unfortunately, the lake had gone dry, and for five or six years grain and hay had been raised on the bottom; but this year, although seeded to barley, the lake was full of water, large numbers of Ducks were already there, and with the northern flight it was expected that, as in former years, one would see "more birds than water".

Although we could not stay to see the northern flight, the day before the hunting season opened we started on what proved a three day's automobile trip from Sweetwater Lake across the prairies to the Turtle Mountains and then back to Island Lake. After spending the summer on foot on the prairies it was exhilarating and mentally enlarging to go, map in hand, bowling rapidly along over the level miles, telling off town after town—Webster, Garski, Starkweather, Cando, and Zion (a Dunkard settlement)—their relative importance shown by their grain elevators, some of which were filled from farms of two or three thousand acres; to send the Sparrows flying from the narrow strips of prairie flowers between the road and the harvest fields, strips whose purple asters and wild sunflowers made bands of purple and gold; to look off on small lakes blue as the sky, wavered over by white-breasted Gulls; and to look far

away on either side to the level horizon whose line was interrupted by the smoke of threshing engines and their output, beautifully modelled, delicately tinted straw stacks.

Striking landscape features the straw stacks made, dotting the harvest fields from road to horizon, their varied crater-like outlines suggesting the cinder cones of California and Arizona, with the parallellism of light ejected substances—straw and pummice—deposited in obedience to the vagaries of the wind. What pleasure to study their forms and to enjoy their soft straw colors as we sped by! Perhaps from their western suggestion on this big prairie, it was easy to imagine the hazy cloud lines along the horizon snowy mountain ranges and snow-capped peaks, far, far away.

When we finally turned away from a purple line on the northwest, said to be the Juniata Hills, we turned toward a purple line on the northeast that rapidly developed into round wooded hills of glacial drift known as the Turtle Mountains. Passing through Rolette, where French names on signs corroborated the statement that the section had been settled by French and Indians, we came back to the hunting season with a jolt, being told that seventy dollars worth of ammunition had been sold to hunters the night before! The migrating Bank and Barn Swallows that we encountered were fortunately no desiderata of the hunters, but probably much of the ammunition had already been expended in the mountains; for when, above Dunseith, we wound around among the wooded hills full of the promise of autumnal beauty and came upon lovely blue woodland lakes, their waters and shore were bare of life.

After my summer on the open prairie, these wooded hills with their olive-skinned cottonwoods, their white-barked aspens, and their homelike elms and box elders showing touches of yellow and brown, their red-fruited mountain ash and thorn-apple, their enriching masses of purple asters and goldenrod, together with their unexpected little lakes, were most grateful and satisfying. As the road wound through the woods, to our surprise, we came upon an attractive little hay slough in an encircling arm of timber, the voices of the haymakers reaching us as they built up their stack on the flat creek bottom. Just beyond we came to the most charming lake of all that we saw, a beautiful body of quiet water, within the seclusion of the woods; its low tree border reflected in the lake, small clouds standing stationary above it. Would that we might see it when the fall colors were reflected in their full glowing richness! Sequestered bays leading back suggested intimate outlets wandering away into the golden privacy of the autumnal woodland; curving sandspits offered cool unruffled pools for diving water fowl; while in the farther reaches of the lake, black tule marsh afforded safe shelter for tender young. A few Grebes were diving along shore and a string of Ducks rested at a safe distance out in the lake, but the hunters had already been that way and while no shots disturbed the quiet of the beautiful place, few of its startled tenants had returned, and those were sadly watchful.

While a few of the hill birds, such as Chewinks, Juncos, and White-breasted Nuthatches were seen, the most notable bird found in the mountains was a Sandhill Crane, discovered by my friends on the shore of a remote, unnamed lake in the woods. The great pink-capped grayish brown bird, standing about four feet high, held its ground for a few moments, but then, too much alarmed by this invasion of its secret haunts, took flight, going off with long neck outstretched. An old man of the mountains who also saw it, remarked sententious-

ly, "They used to be lots of 'em, but you don't see many like you uster." Splendid great birds! May the gods of the hunted preserve their remnant! Protected though they now are by law, they afford altogether too good a target for those who buy seventy dollars worth of ammunition in one night!

Although the hunters find fox and coyote and even timber wolves here now, it is difficult to realize that in these low-timbered gentle looking hills moose and grizzly bear used to roam at will; but such is the testimony of the old hunters. One of them told me that a half breed actually killed three grizzlies here in one day, and that a farmer going up to the mountains for a load of wood found one asleep and killed it with an axe.

On leaving the mountains for Island Lake, as we came out of the timber on the crest of the hills we had an expanding view down over the wide prairie, so wide that curiously enough its horizon suggested the blue distant line of hills that we had seen when first looking up from the prairie to the mountains. While Island Lake now harbors only game birds, a white-bearded Scotchman at whose house we spent a week, told me that thirty years ago, antelope used to run along the shores of the lake. "There were lots of antelope," he said, "out all over the prairie where nobody was living." Ruminating over the memory, the patriarchal Scot exclaimed, "in the air-ly days this was rightly called the sportsman's paradise. Oh, you could have no idea of the amount of game there was here unless you saw it! I've seen Geese so thick on that forty west of here that they hadn't room to light. There was awful lots of Crane in them days, too," he added. They were indeed so abundant as to be very destructive. The finest barley the old man ever saw, when threshed yielded only twenty-five bushels, for, as he said, "it had all been danced out by the Crane." Summing it all up, he concluded reminiscently, "The Crane and Geese used to come in by the hundreds—till the lake went dry—that put them away."

About twenty years ago, the old Scot told me, he could row a boat from the north end of Island Lake to the south end of Grass Lake, a distance of about nine miles. At that time the long wooded ridge which gave the lake its name and on which we found a Crow roost, made two islands, each a quarter of a mile long; but now the ridge is connected with the mainland on the north, and the water is so shallow that in many places mat-like patches of pale green grass add a beautiful note of contrasting color to the rich ultra-marine water. Straw stacks rising from the middle of the lake suggested seal rocks, the Ducks climbing up on them to sit. Their dotted lines up the side of a stack looked surprisingly uniform until I saw the Ducks file up from the water and stop, each in his own tracks. Some of course perambulated about, but the effect of lines was notable.

Hundreds of Ducks were scattered over the lake, feeding hidden in its marshy borders or resting in flocks of single species on the open water. From the green cover of a strip of marsh in front of us one day, we were astonished to have a great flock of Mallards suddenly rise, and with white outer tail feathers showing, fly off to more distant shelter. They, like most of the Ducks seen, were still in the brown eclipse plumage, but some near the middle of September were already beginning to "color up". Among others, a Mallard brought in from an unprotected lake, showed some green feathers coming in on his head. One of the largest flocks seen on the open water suggested a carpet of Pintails, so solidly were they massed. They sat facing us, looking like a bed of mushrooms, brown on top, lighter below. Being used to seeing people coming for

the cows, they let us creep along the fence near enough to make sure that their flock was almost unmixed. Occasionally one, perhaps a sentinel, would stretch up a long neck to look at us; and finally they all rose and flew. Enormous flocks of Blue-winged Teal also shifted back and forth as we watched, the blue wing patches showing well as they soared down on their spread wings.

Suddenly a black looking Hawk with a face stripe, apparently a Duck Hawk, flew swiftly in and to our horror darted down and seized a Coot. As he rose to fly off with it, the Coot slipped from his claws, when, swinging around with the swift wing beats of a Falcon, the little Hawk flew down again, bringing up what was probably another Coot, this time successfully flying off with it to a fence bordering the lake. When we followed, he carried his quarry still farther away, and proceeded with his meal. Meanwhile we discovered two fence posts apparently frequented by a Marsh Hawk, as remains of a rabbit's foot and pieces of ground squirrel skin were found, good evidence, as the Duck Hawk feeds almost exclusively on birds, while the Marsh Hawk feeds mainly on mammals.

While the swiftness and dash of the blackish Duck Hawk doubtless explained his surprising the Coot, we wondered if he had been helped by the fact that the waterfowl were used to the presence of dark-bodied Crows which had a roost on the island, and some of which at the moment were drinking on the shore close to the scene of the tragedy. That the Ducks do not discriminate too nicely was suggested when they acted afraid of a Marsh Hawk to whom they generally pay no attention, apparently because the Duck Hawk flying around in the vicinity had upset their nerves.

Shovellers and Canvasbacks were easily recognized among the brown hordes, and from a neighboring lake two beautiful Green-winged Teal were brought in. Pied-bills, Eared, and perhaps Horned Grebes, Bittern, Black-crowned Night Herons, and Killdeer were seen along Island Lake, and what was probably a Sora was heard, late though it was. Kildeer notes were heard over-head, one day, and nine swift travelling birds came in sight, but as we turned to watch their retreating forms, the nine white spots faded out in the sky. Others were heard by my friend on a moonlight night, passing over on their long journey.

Besides the common birds noted at the other lakes during the summer, such as Goldfinches, Vesper Sparrows, Yellow Warblers, Barn Swallows, Catbirds, House Wrens, Meadowlarks, Crows, Red-winged Blackbirds, Mourning Doves, and Flickers, a Nighthawk, a White-breasted Nuthatch, and a Yellow-rumped Warbler were seen, together with three Turkey Vultures that circled around in the sky low enough for us to note the black and gray pattern of the underside of their wings. Two brown Marsh Hawks, apparently young of the year, frequently came close to us as we sat quietly beside their hunting grounds, and one of them once gave a thin, whistled *pebe, pebe*, as it flew toward its brother. Forever beating the marshes, the appropriateness of their name was felt strongly in this lake region.

The familiars of the lake region, the Franklin Gulls, abounded here as elsewhere. In one place on plowed ground I saw what at a distance I took for a slough filled with white water, but which on approach proved solidly massed Gulls! As at Sweetwater, the Gulls drifted across the country at sunset toward some favorite lake where they could safely spend the night. Hundreds were met with in our pasture flying, or perhaps rather sauntering, back and forth,

some quite near the ground, though at this time they did not appear to be feeding, but merely loitering on their way.

We saw some of the lakes where they might have gone, on our trips over the prairie, in the family Ford. For the intelligent young farmer who, not long from Scotland, read his Burns as only a true Scot can, often took off the edge of the day's work for the capable makers of oat cakes by short jaunts in the car, kindly asking us to go along. Now a can of cream to be carried to the station three miles away, now a bag of grain to be traded out at another town equally distant, was the excuse for the exhilarating drive. Sometimes as we raced past farms and villages, the talk drifted to the local sects, numbering among them Dunkards, Amish, and Mennonites; and we were told that the self-denying Amish wear hooks and eyes instead of decorative buttons; wear untrimmed, if colored dresses—a child in solid happy red we hoped marked escape from the spirit of sadness—build barns without cupolas, and, worst of all, own no automobiles! A most elaborate cupola seen on a barn, we imagined celebrated escape to the sect of the less rigid Mennonites, to whose numbers, we were amused to hear, some of the Amish are withdrawing—that they may buy automobiles! One of the Amish men was going about the neighborhood with a threshing outfit and when our turn came and the cook car with its Sioux cook was established in our front yard—smoke coming out of its stove pipe and a roller towel hanging from its outside wall—rain kept the men from work and I was glad to see the long-bearded puritanical Amish looking on indulgently while his men passed the time by playing quoits. Surely there was no lurking sin in this!

When an errand about the threshing gave us a moonlight drive to the beautiful blue Twin Lakes, we heard the welcome news that a flock of Geese had already gone over—"I heerd them holler", the neighbor said in testimony—and added that the lake had been visited by seven white Pelicans for a week before the opening of the hunting season.

Before leaving we had the good fortune to have a visit from the Pelicans at our own lake. When out walking just before sunset I happened to glance up and discovered a flock of about forty of the superb white birds in the sky. To my joy they flew down to the lake, lighting out in the middle of the clear open water opposite the Crow roost on the wooded island beyond. Walking across to a screen of trees on the edge of the lake I watched them quite unobserved, as long as I could stay. The setting sun lit up their file, a line of great white birds with orange pouches, while the dark forms of Ducks spotted the surface of the lake and two inquiring ones swam up near the white procession to satisfy their curiosity. The procession faced, now north, now south, now west, and as it filed by in dignified silence one of the great birds would occasionally lean forward and plunge in his bill up to the hilt. But the last low rays of the sun were touching up the green bases of the tules below the Crow roost, the Crows were restlessly flying around trying to get settled for the night, and I reluctantly started home, facing the sky of red and gold, and the soft clouds of its afterglow.

Early the next morning my friend and I hurried down to the lake, and to our great satisfaction were able to watch the Pelicans for an hour or so before they left. They were evidently getting ready to start on their morning flight high through the sky to some distant feeding ground, for they spent their time sunning themselves, stretching their wings, and drilling (swimming) in

close procession, back and forth in well practiced unison, as if for better team work in the sky. Back and forth they swam over a beat only a few rods long, running from opposite the Crow roost on the island to a point opposite a foxtail bank on the shore below. At the end of the line they would break ranks and ride *at ease*, doubtless to avoid the difficult maneuver of wheeling. When at ease they opened their close ranks, each doing what he pleased for the moment, some with heads erect and bills drawn in, some preening head down and bill extended horizontally; two or three, perhaps, at the end of the line fishing in a desultory manner, the sun lighting up their orange throat patches: while, most picturesque sight of all, one occasionally stretched out his black-bordered wings to the full extent of their ten feet, canopying the heads of a long row of his brothers.

After being at ease for a few moments, those at the north front would start and the line straighten, the birds "falling in", as nearly as I could see, in ranks of two; after which they would start off, swimming slowly, silently, like the white swan of Lohengrin. Once the flock split, the two parts swimming in opposite directions, by two's. But their one idea seemed to be good team work, and back the two divisions swam till they faced each other, on which one division made a right-about-face and the restored file again swam ahead as a unit. Another time when opposite the foxtail bank, one at the end started to fish; but when the middle ranks broke and started back toward the Crow roost, the fisherman turned and followed, quickly acquiescing in the will of the majority. An individualistic brother at one time mounted a rock and stood for a few moments looking like a giant as the others swam below. But then, as if compelled by the socialistic law that governed them all, raising his wide wings he flapped back down the line, a striking figure, his bright orange feet showing, his immense black-bordered wings flapping over the white ranks till he again took his place in the procession.

At one time the great birds shook out and ruffled up the feathers of their wings till they suggested Swans with plumes high on their backs—possibly to let the sun in—and nearly the whole line rode for some time in this unusually beautiful pose. For an hour or two the great birds kept up their maneuvers—attention, dress, forward-march, by two's, at ease. At times the whole file would face us, then all face the island opposite; then all north, then all south, swimming back and forth—swimming slowly, silently, in a close, white procession, sometimes mirrored in the lake.

Finally, however, the leader rose at an angle, and after a little hesitation, as if surprised by the action, one and then another rose along the line to follow his behest; and, wholly unconscious of our presence, circled around almost over our heads with a *swish, swish*, of their enormous wings, the sun on the underside of their bodies making them look almost saffron, and their bills and feet orange. Swinging, circling, and mulling, they shifted their lines so rapidly it was difficult to count them, gradually rising higher and higher, going on through the sky beyond our field of vision. That night we again went down to the lake hoping that the Pelicans might return, hiding ourselves in the yellowing willows lit up warmly by the setting sun. A lovely golden light lay over the marsh, turning the green mats a vivid green, the bases of the stalks a golden yellow, warming up the trees on the island, especially the cottonwoods of the Crow roost, and beyond lighting up the straw-colored stubble fields:

above, turning the edges of the rolls of clouds to buff. A passing Marsh Hawk tilted up catching the light so that his breast glowed a warm rufous. Coots grated, Mallards quacked, and Eared Grebes gave their soft *hoy-up, hoy-up.* The buffy clouds turned to a soft veiled salmon. Squad after squad of Crows flew over the lake till several hundred had gone to the roost. High in the sky a small band of Gulls straggled over. Then the bright sunset colors faded in the east to the dull soft pinks and blues presaging night. Our Pelicans would return no more; they had passed on to seek other waters.

(*To be continued*)

FROM FIELD AND STUDY

Trumpeter Swan Breeding in Yellowstone Park.—During the past summer I found a nest of the Trumpeter Swan (*Olor buccinator*) on a low island in a lagoon northeast of Lewis Lake, Yellowstone National Park, containing five whitish eggs. Other signs of the swans were seen at various times during the summer. On September 6, 1919, I again visited this section and found five Trumpeter Swans (the two parents and three nearly grown young that were then large enough to fly well) in the lagoon and later flying and uttering their far-reaching calls.

In previous years I have seen Trumpeter Swans here and acting in such a way that I believed they were breeding, but I believe that this is the first authentic record for the Park.

Mr. H. M. Smith, Fish Commissioner, reports that on July 16, 1919, he visited a small, unnamed lake lying south of Delusion Lake, Yellowstone National Park, and found therein a pair of swans with six young about the size of teal and swimming actively. This was probably another family, as the two localities are eight miles apart in a direct line.—M. P. Skinner, *Yellowstone Park, Wyoming, January 28, 1920.*

Bohemian Waxwing in Southeastern California.—On December 21, 1919, Mrs. Swarth and I were travelling between the Grand Canyon and Pasadena. At the little desert station of Danby, California, some fifty miles west of Needles, on the Santa Fe railroad, two Bohemian Waxwings (*Bombycilla garrula*) were seen. Although this is a sight identification, and from a train, I have no hesitancy in placing it on record, with certainty that the birds seen were Bohemian Waxwings and not the smaller Cedar Bird. The train stopped a few minutes at that point, and the birds were seen at quite close range from the observation platform. They were first noted flying past, and they lit in a cottonwood some twenty or thirty yards from the track. They were in plain sight, and their call notes were heard also. As I had but recently seen the species under most favorable conditions for observation (see p. 80), the bird's appearance in life was sufficiently fresh in my memory to enable me to feel certain regarding the minor differences distinguishing the Bohemian Waxwing from the Cedar Bird.—H. S. Swarth, *Museum of Vertebrate Zoology, Berkeley, California, February 7, 1920.*

Golden Eagle at Porterville, California.—On January 7, 1920, a Golden Eagle (*Aquila chrysaetos*) flew down between two houses in the thickly settled part of Porterville, in an apparently exhausted condition. Two men happened along, and, taking hold of each wing, led it away for four blocks. It was placed in a large shed and then given to the writer. After several days it began to eat, and it now seems to be out of the stupor it was in at first. The only explanation I could make to account for its condition was that it might have been eating poisoned squirrels. It might, perhaps, have come in contact with an electric line, but the former explanation seems more apt to be correct.—L. W. Hudson, *Porterville, California, January 16, 1920.*

Southerly Nesting Records of the Arctic Tern in Southeastern Alaska.—During the summer of 1915 numerous Arctic Terns (*Sterna paradisaea* Brünnich) were observed

about Taku Inlet, southeastern Alaska, and in particular over the sand flats between salt water and the "dead" glacier (Norris Glacier) a couple of miles back. They were obviously breeding although one hasty search failed to locate either nests or young. The following year on May 29, 1916, on the summit of a small rock islet in a shallow glacial lake in front of Twin Glaciers, tributary to the lower Taku River, I found my first nest of the Arctic Tern, containing three eggs. The nest was in a protected place between small boulders and was made wholly of the lichens that are so common on the rocks and flats near the glaciers. On this same islet which is not more than eighty feet long and forty wide, were two nests of Short-billed Gull (*Larus brachyrhynchus*) and one of Glaucous-winged Gull (*Larus glaucescens*), and the remnants of a Scoter nest.

Later in the day a friend and myself in a couple hours search of the bare sand flats in front of Norris Glacier counted over fifty nests of the Arctic Tern, almost all of which contained two eggs although there were three nests of three and a few incomplete sets of one. No incubated sets were found. None of the sets were in any especially prepared nest other than a mere depression in the sand. A few were close between rocks of a foot or two in diameter but the majority were not closer than a rod or more to any rock larger than one's fist, or to any other landmark.

In July, 1916, at the Situk River, near Yakutat, and in 1917 again at the Situk and at the Alsek River, flowing into Dry Bay, Arctic Terns were common and obviously breeding although no nests or young birds were found in the very brief time available for search. The fishermen on the Situk stated that the Terns were nesting on the sparsely covered grass flats. On the Alsek they were undoubtedly nesting on the low flats, scarcely more than bars, where the gulls were nesting so abundantly.

On various occasions when about the Stikine River flats and in LeConte Bay, both near Wrangell, Arctic Terns have been seen and careful search will undoubtedly find them breeding in the vicinity. Apparently the most likely places for them in that locality are on the small unnamed island, locally called Cony Island, on the north side of the Stikine Dry Pass, near the entrance to LeConte Bay, and on the low shore at the right hand entrance to the Bay. It is also possible that they might be nesting on the nearly bare rocks some distance above salt water on the left hand shore near the LeConte Glacier. The finding of Arctic Terns nesting in this vicinity would be a record about one hundred and fifty miles farther south than my southerly record in the Taku Inlet.

Since preparing the above Mr. E. W. Nelson has called to my attention the article by Mr. Willett (CONDOR, XVI, 1914, page 75) of the supposed nesting of the Arctic Tern in the Taku Inlet.—ERNEST P. WALKER, *Phoenix, Arizona, January 2, 1920.*

Two Birds New to the Lower Colorado River Region.—While collecting in the Yuma valley on the California side of the Colorado River, during November and December, 1916, I collected the two following birds, which are worthy of record:

Lophodytes cucullatus. When crossing over a small bridge that spanned an irrigation canal about three miles north of Bard, Imperial County, California, on November 26, 1916, I flushed a duck that had been feeding in the partially drained canal. On shooting the bird it proved to be a Hooded Merganser. It is an adult female and is now number 820 of my collection.

Toxostoma curvirostre palmeri. On December 31, when starting out in the late afternoon to set my line of mouse traps, I noticed a Thrasher scratching on the shady side of a neighbor's wood pile. On collecting the bird I was surprised to find it to be a Palmer Thrasher. This is the first occurrence of the species in California. It is an adult female, taken three miles north of Bard, Imperial County, California, and is number 1020 of my collection.—LAURENCE M. HUEY, *San Diego, California, January 7, 1920.*

Red Crossbills at Berkeley, California.—On January 15, after several unsuccessful attempts to get a close view of the Crossbills which had been present in considerable numbers for a week, I happened upon a flock of eight or ten in an old almond orchard near my house. The trees were absolutely bare, but evidently some of the nuts had fallen to the ground and had escaped the small boys and the Bluejays. The Crossbills picked the almonds from the ground, flew up into the trees and noisily pried open the shells with their bills. After eating the kernels they dropped to the ground again to search for more.—AMELIA S. ALLEN, *Berkeley, California, February 6, 1920.*

Unusual Birds of My Garden.—The three closing months of the year 1919 have been memorable ones in the bird world in my garden. Never in my twenty-one years residence in Los Angeles, have I had so many species so early in the season. On October first a large flock of Cedar Waxwings (*Bombycilla cedrorum*) appeared in my pepper trees, several weeks earlier than usual. I am sure that I heard them a few days before this, also. On the 24th of October the first Robin (*Planesticus migratorius propinquus*) arrived, to be soon followed by a large flock that is still here (January 7, 1920), eating pepper berries, drinking at my bird baths and singing the regular Robin song.

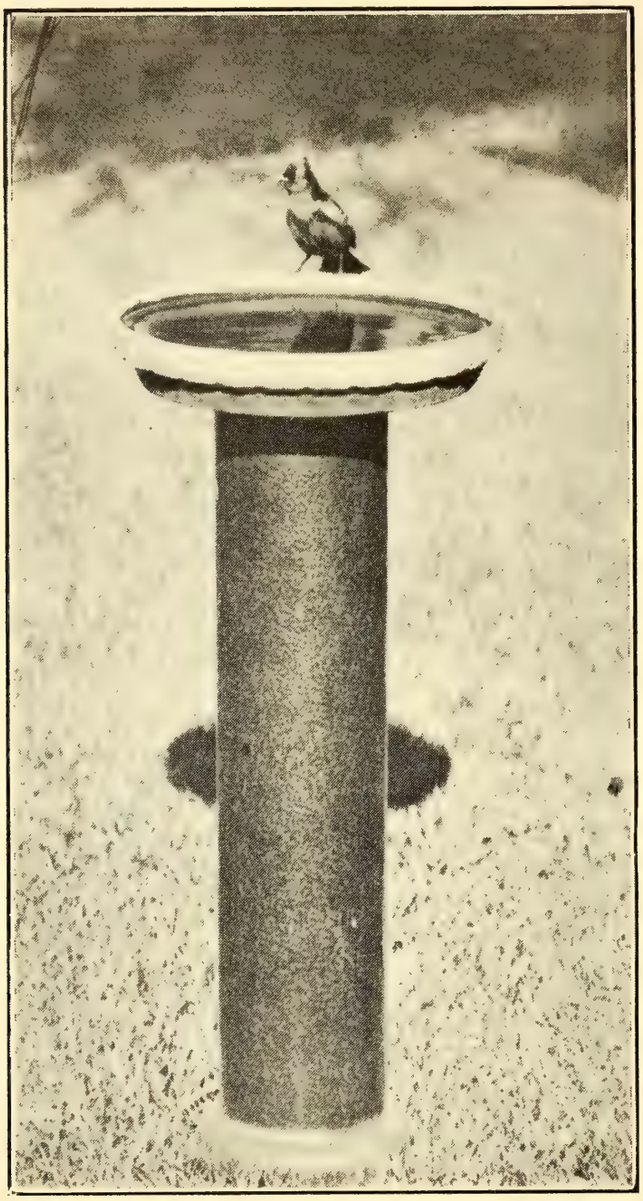

Fig. 13. Male Phainopepla, photographed by Mrs. Myers at the drinking basin in her yard in Los Angeles.

November 9, a Mountain Chickadee was about for a short time. The only other time that I have had one in the yard was two winters ago when, later in the year than the present time, one was about for two or three weeks. November 12, a Crested Jay (*Cyanocitta stelleri frontalis*) was seen. This was not in my garden but a little farther up the Arroyo Seco in Pasadena (under California St. bridge); two of these birds were in my yard on January 13, 1920.

November 19 a Slender-billed Nuthatch (*Sitta carolinensis aculeata*) rested on the elder tree, head downward, for about five minutes and scarcely budged when I came out on the porch near him.

On November 25 a male Phainopepla (*Phainopepla nitens*) appeared in the pepper trees and came to a drinking basin. December 7, and once a day or two later, a female of this species was about. I have not seen her since, but on the 9th the male was again seen and has been an almost daily visitor ever since (up to January 18, 1920), defying the Robins at the bird bath and withstanding the onslaughts of the meddlesome Mockers.

December 6 a Dusky Warbler (*Vermivora celata sordida*) visited my food shelf. On December 11 a flock of Purple Finches were first noticed in the yard. These birds are fond of the fallen pepper berries as well as the fruit buds. They are still here and usually stay until March, at least.

Besides the birds mentioned, almost daily visitors in my garden are the Plain Titmice, Wren-tits, Kinglets, Audubon Warblers (which are not so abundant as usual), a Spurred Towhee, Alaska Hermit Thrush, Gambel Sparrows, Black Phoebes, Anna Hummingbirds, Greenbacked Goldfinches, Willow Goldfinches, Mockingbirds, Linnets, Anthony Towhees, Song Sparrows, Bush-tits. Less frequent recent visitors are California Jays, Gnatcatchers, Chipping Sparrows, Flickers, California Woodpeckers (on posts along the walk), Willow Woodpeckers, Pasadena Thrasher, Valley Quail, and the despised English Sparrows.

For the last month the Waxwings have not been so much in evidence, although there are still plenty of pepper berries, which are their especial delight.—Harriet Williams Myers, *Los Angeles, California, January 18, 1920.*

The Varied Thrush in Wyoming.—Mr. L. R. A. Condit, a well-known rancher of Barnum, Wyoming, has presented to the University of Colorado Museum an immature male Varied Thrush (*Ixoreus naevius* or subspecies *meruloides*) taken at his ranch on Beaver Creek, near Barnum, at the foot of the Big Horn Mountains. I find no published record of this species for the state of Wyoming. Mr. Condit informs me that there were about twenty-five or thirty of the birds, of both sexes, presumably, from his account, all immature, and they remained about the ranch for over a week after November 9, 1919, when the specimen at hand was taken. This bird of the northwest has long been known as an occasional straggler into distant territory, seemingly having no regard at all for the artificial lines established by men to separate political subdivisions of the earth's surface. There is one record of a mature male for Boulder County, Colorado, and it has been recorded from Kansas, New Jersey, New York, Massachusetts, etc. Whether this is the true *naevius* or *meruloides* I should not dare say with the one specimen before me. The latter is said to nest in Montana and eastern Oregon. With these facts in mind, it is not surprising to find the birds in Wyoming, but its discovery there by Mr. Condit is one of many illustrations of additions to scientific knowledge due to the work and interest of observing laymen.—Junius Henderson, *University of Colorado, Boulder, Colorado, December 27, 1919.*

The Wood Ibis as a Winter Visitant to California.—The Wood Ibis (*Mycteria americana*) has been noted in southern California only during the summer, so it seems desirable to put on record the presence of at least one small flock, numbering eleven individuals, in the vicinity of Calexico, Imperial County, during the last two days of November, 1919. I saw these birds twice (once close enough to make identification absolute) while they were flying over, and the manager of my ranch stated that he had seen the flock every few days during the past six weeks. As there had been considerable cold weather with some ice previous to this date, it is safe to presume that the birds were not merely laggards from the regular summer invasion of the species of the Colorado Valley. This flock was reported to have spent considerable time in the alfalfa fields, which were not being irrigated because of recent rains. I regard this information as coming from a reliable source, and although this species is not known to feed on grasshoppers, nor indeed on anything which they do not secure from the water, what else could they be doing in an alfalfa field? It is not many years since this valley was put under cultivation, and it has had a very marked effect in modifying the bird population. Although the winter nights are chilly, the days are decidedly warm, and it would not surprise me if the Wood Ibis, as well as other species that have heretofore been considered warm weather visitants, gradually decide to resort to this section throughout the year.—A. B. Howell, *Berkeley, California, January 4, 1920.*

Gulls Following a Train.—It will be recalled that some years ago there appeared in The Condor an article entitled "Goonies of the Desert" (Grinnell, Condor, x, 1908, p. 92), in which the actions of Ravens following a train were compared to those of seabirds in the wake of a steamer. The present writer recently was reminded of this comparison by circumstances comparable to, but still different from, either of those just mentioned. The Union Pacific Railroad for some years past has crossed Great Salt Lake on what is known as the "Ogden cut-off", partly a trestle and partly a fill, on which the track practically bisects the lake. On the afternoon of November 6, 1919, while I was sitting on the observation platform of the train as it started on this crossing, a number of gulls were seen gathering from all sides. They fell behind in just such a way as we are used to seeing them trail after the ferry boats crossing San Francisco Bay, and remained in attendance until the lake was crossed, a matter of some hours. The train travelled slowly and the birds had no difficulty in keeping abreast of it. Occasionally one lit on a telegraph pole for a few moments and then overtook us once more. None was seen to garner any edibles thrown overboard, but presumably they do reap a harvest of this sort at times. It was an odd combination—the attendance of these maritime birds upon this conveyance of the dry land.—H. S. Swarth, *Museum of Vertebrate Zoology, Berkeley, California, February 7, 1920.*

The Blue Goose as a Bird of California.—The first ascription of *Chen caerulescens* to California was made by Belding (Zoe, III, 1892, p. 97). The evidence given by Belding was as follows.

"Two of these geese were shot, one day, about February 1, of this year [1892], by two hunters who were hunting together near Stockton. Mr. M. J. Shaw of the game market kept one of them on exhibition as long as he could, and then saved the head and neck, wings and legs. These fragments were all that I saw of the bird, and these I sent to Mr. Ridgway for identification. He said it was a true *Chen caerulescens*—a juvenile."

Belding then goes on to say that it had been his belief "for nearly ten years" that he had "occasionally seen the plumage which is attributed to the adult, a few of which" he "shot, besides some" "seen in market . . .".

Belding is quoted (Fisher, Condor, xx, 1918, p. 56) as having stated many years later, probably subsequent to 1910, that he had "often hunted geese on Butte Creek and many times tried to get the Blue Goose (*caerulescens*) but never succeeded so far as to be satisfied with the result. Of two that" he "found in the Stockton market", he "sent wings and feet to Mr. Ridgway, who identified the fragments as of *caerulescens*." This statement, it will be seen, corroborates in the main the earlier one.

Cooke (U. S. Biol. Survey bull. 26, 1906, p. 68) gave Belding's Stockton record full recognition, and considered it "apparently the only record west of the Rocky Mountains." Several other authorities at about the same time likewise took this record at face value.

But Swarth (Condor, xv, 1913, p. 43) was inclined to consider the evidence of the occurrence of the Blue Goose in California "rather weak" and goes on to point out, on the basis of a recent case in point, how the young of the Lesser Snow Goose might be misidentified as of the Blue Goose. Grinnell (Pac. Coast Avif. no. 11, 1915, p. 177) follows Swarth, and he places the Blue Goose as a bird of California in his "hypothetical list" on the ground that Belding's "record seems open to question, more particularly because of absence of confirmation". And Grinnell, Bryant and Storer (Game Birds Calif., 1918, p. 211) dispose of the case rather summarily under "Lesser Snow Goose".

Now comes fresh evidence, which seems to provide the needed "confirmation": On December 15, 1910, a hunter by the name of Bud Watson killed a "pinto" goose on the King Ranch, eight miles west of Gridley, Butte County. The bird passed into the possession of Dr. Lemuel P. Adams, of Oakland, and was mounted for him by W. H. Hall, a taxidermist of that city. It remained in the possession of Dr. Adams until December, 1919, when it was presented by him to the Oakland Public Museum. The Director of that Museum, Mr. John Rowley, notified an officer of the California Museum of Vertebrate Zoology of this important acquisition, suggesting that his identification of the bird as a Blue Goose might need verification. Accordingly, on January 13, 1920, J. Eugene Law and J. Grinnell, carrying with them an Eastern-taken specimen of *Chen caerulescens*, visited the Oakland Public Museum, and satisfied themselves of the correctness of the determination as originally made by Mr. Rowley. The two specimens proved identical in all essential points. Through the courtesy of Mr. Rowley, first published record is now made of this bird, which is number 10/1446 in the collection of the Oakland Public Museum, where it is open to examination at any time. The present writer has further communicated with Dr. Adams, who verifies the details of capture as just given.

The upshot of the matter is, then, that the Blue Goose *has* occurred in California. The probabilities now are strong that Ridgway's identification of Belding's "fragments" was correct, and further, that the latter's impressions of having observed the species in California on more than one occasion are worthy of being taken into account.

The status of the Blue Goose in California seems, therefore, to be as follows: Rare winter visitant to the Sacramento-San Joaquin Valley. Recorded definitely twice, by Belding (loc. cit.) from the vicinity of Stockton, about February 1, 1892; and by Grinnell (present instance) from vicinity of Gridley, Butte County, December 15, 1910.—J. GRINNELL, *California Museum of Vertebrate Zoology, Berkeley, January 15, 1920.*

Black and White Warbler at Carpinteria, California.—I wish to report the occurrence at Carpinteria, on January 9, 1920, of the Black and White Warbler (*Mniotilta*

varia). The bird was observed continuously from 8:45 to 9:30 A. M., at a distance of from six to thirty feet. The entire time was spent hunting over the bark of the larger limbs and trunk of a live oak. At the end of the forty-five minutes it flew to another oak about one hundred feet away. Mr. Ralph Hoffman also saw the bird and can vouch for my identification.—H. C. HENDERSON, *Carpinteria, California, January 27, 1920.*

A Swan Hunt.—Hunters reported that Whistling Swans (*Olor columbianus*) were coming in on the Sweetwater Reservoir again. A few were there last winter. Mr. Toms arranged with the caretaker to take us out to try to get a specimen to mount for the Natural History Museum, and we drove out to the reservoir December 10, 1919. The reservoir at its present stage is about a quarter of a mile wide and a mile and a half long. We first saw three swans standing on the shore. The field glasses showed that they were all young of the year so we passed on. Half a mile farther on were two bunches, five and six respectively, some of each bunch being adult. The five were on shore at the head of a bay and appeared to offer the best chance for a shot. They flushed before we got into the bay and passed by at such long range that we failed to reach them. All the swans in the reservoir promptly left for San Diego Bay and we turned back for the landing at the dam. On the way we looked over the ducks in sight to see if there were any not represented in the Museum's collection, but saw nothing I wanted except two Canvasbacks, which we collected.

On arrival at the landing the caretaker's helper asked if we had seen the flock of twenty-three swans that had just passed over, going up the reservoir. We had been so busy looking at the ducks that we had not seen the swans pass high overhead, so we ate our lunch and started after them. We found them swimming about on the upper part of the reservoir. The caretaker landed Mr. Toms and me on a rocky point where a few square yards of tules grew at the edge of the water, and then rowed across the reservoir and up the far side in an attempt to get around the swans and drive them to us. They flushed and flew past out of range, and lit again a quarter of a mile down the lake. The caretaker succeeded in getting past them this time and turned the flock toward us. He worked very slowly and at one time the whole bunch stopped swimming and went to sleep, heads down, but a slight advance of the boat awoke them and started them swimming toward us. Occasionally we could hear a low goose-like honk. I have never heard of this talking habit. The actions in general were very like those of geese. The swans were too suspicious to come close to the tules but swam past in line at long range. We fired with buckshot and got one. It was not fully mature but was a very nice bird. Weight fourteen and a half pounds, in rather thin flesh. The stomach was full of large seeds or small bulbs with sprouts half an inch to an inch long. Mr. Toms suggested that they might be grains of rice eaten in the Sacramento Valley and not yet digested, but the grains looked too large for rice. Later, these "grains" were identified at the California Museum of Vertebrate Zoology, as tubers of sago pondweed (*Potamogeton pectinatus*), an abundant freshwater plant in most marshes of California.

A female Wood Duck (*Aix sponsa*) came to decoys on the Lower Otay Reservoir, San Diego County, December 7, 1919. The hunter did not know what it was and brought it to us.—FRANK STEPHENS, *San Diego, California, December 20, 1919.*

A Large Flock of Swans Wintering at Santa Barbara.—In the middle of November, about a dozen Whistling Swans (*Olor columbianus*) were observed on a small pond on the Hope Ranch in Santa Barbara. On December 24 their number had increased to forty-four. The pond is protected and is the resort for hundreds of water-fowl.—RALPH HOFFMANN, *Santa Barbara, California, December 29, 1919.*

Is the Swan Increasing in Numbers?—Whistling Swans (*Olor columbianus*) may be seen during the winter in flocks of considerable size at suitable spots in the central part of the state, but there are few places in the more southern sections where they are now considered at all common. Small flocks are sometimes encountered where the surroundings are congenial, and slightly larger ones linger for short periods at such places as Warner's Ranch, in the mountains of San Diego County. Swans occur off the coast, as well, coming inland at night to feed, but, on the whole, a southern hunter considers

the fact worth telling about if he has encountered more than a half dozen birds together, and during ten years of field work, I have never seen more than ten at one time. Hence, it was with considerable excitement that I found a flock of a hundred and fifty-one of these birds and a lone goose (presumably *Branta canadensis canadensis*) making themselves at home in Crane Lake, which is situated at the upper end of Antelope Valley in Los Angeles County. I examined them for some time through ten power glasses while most of them were within a hundred and fifty yards of me and the public road. Although automobiles were passing continually, the swans were unconcerned, and while a small company was sleeping on the shore, the head and one foot of each tucked out of sight, others were standing on their heads in the shallow water, or indulging in violent altercations, craning their necks to the fullest extent, rushing at each other and making a great racket. Still others were swimming about with necks curved into the characteristic posture. The scene called to mind accounts of the abundance of game in the old days and was a sight that I never expected to witness.—A. B. Howell, *Berkeley, California, January 4, 1920.*

Unusual Conditions for Southern California.—The closing months of the year 1919 have proven of especial interest to bird students in southern California because of the greater or less displacement of a number of species of birds from their average fall and winter ranges. It is to be hoped that all who have noted such unusual conditions will record their observations so that some more comprehensive view of the situation as a whole may be attained. The following notes are offered as a contribution toward this larger view.

On August 29, a male Summer Tanager (*Piranga rubra rubra*) in summer plumage came to the fig tree in my yard in the city of Los Angeles. The bird was twice seen and later secured. It uttered the typical call note of the species and seemed not at all shy. The specimen was submitted to the editors of The Condor and was referred by them to the subspecies *rubra*. The only other record of the subspecies for the state was from the same locality in March of the same year (Condor, xxi, 1919, p. 129).

The Red-breasted Nuthatch (*Sitta canadensis*) was noted on August 29 and on later dates among the sycamores in the Arroyo Seco within the city limits. The Golden-crowned Kinglet (*Regulus satrapa olivaceus*) again spends the winter in the city. California Purple Finches (*Carpodacus purpureus californicus*) were early in arrival and were unusually abundant in numbers. Sierra Red Crossbills were seen but will be recorded by others who took specimens. There have moved down from the Transition Zone, probably of the adjacent mountains, a number of Mountain Chickadees (*Penthestes gambeli baileyae*), and a colony of Blue-fronted Jays (*Cyanocitta stelleri frontalis*) both of which species have been in the vicinity for some months. Two specimens of the latter species were taken from a group of five seen at one time.

Finally, on December 22, an adult male Evening Grosbeak (*Hesperiphona vespertina montana*) was taken just outside the city limits near my place. The specimen is the darkest I have ever seen. It was feeding on an open hillside where some scrubby cascara and elder bushes chanced to be growing. It was very fat and the crop was filled with the shelled kernels of cascara seeds.—Loye Miller, *Southern Branch, University of California, Los Angeles, January 20, 1920.*

Notes From the Region of Lake Tahoe.—At Grass Lake in Glen Alpine Canyon, this summer, I took a specimen of the Sierra Red Crossbill (*Loxia curvirostra bendirei*) which had in its crop two pupae of some lepidopterous species. The pupae were more than ten millimeters in length so could not well have been taken as a mere accompaniment of other food. I had supposed the crossbill limited in its diet to the seeds of coniferous trees.

The distribution of *Leucosticte* is so consistently given as above timber line, that I felt some surprise at finding a family of the Dawson Leucosticte (*L. tephrocotis dawsoni*) at an elevation of only 7800 feet, just below Lake Lucile (see Pyramid Peak quadrangle). Abundant timber is found above that point in the immediate vicinity, and two juvenals were taken from a small tamarack pine within fifty yards of where an adult

was found feeding about a small snow bank. There was strong suggestion that the three birds constituted part of a family reared in the immediate vicinity. The date was July 15, 1919.

I was surprised also to find on two occasions the Western Gnatcatcher (*Polioptila caerulea obscura*) at timber line on Mount Tallac. Nine thousand feet is pretty well up for this species, commonly considered Sonoran.

I was further interested to obtain a specimen of the Western Redtail (*Buteo borealis calurus*) in the timber of a deep canyon, and to find in its crop the remains of a full grown Douglas Chickaree (*Sciurus douglasi albolimbatus*). The Chickaree is seldom seen in the open. He is almost limited to the denser timber. My concept of the Red-tailed Hawk was that he is a plainsman—a bird of the open country feeding upon the ground squirrel and the jack rabbit. To take the Douglas Chickaree must have required a quickness of wing action not generally conceded to this rather heavy hawk.—Loye Miller, *Southern Branch, University of California, Los Angeles, January 26, 1920.*

Some Winter Birds at the Grand Canyon, Arizona.—Although the Grand Canyon is visited each year by thousands of sight-seers, there has been almost nothing published about the birds of that region. This may be, perhaps, because of the all engrossing scenic attractions, causing even the most confirmed bird lover to abandon his hobby for the time being, or because of the relative scarcity of bird life. However that may be, there seems to have been but one paper published upon this subject, a "List of birds noted at the Grand Canyon of the Colorado, Arizona, September 10 to 15, 1889", by C. Hart Merriam (U. S. Dept. Agric., North American Fauna no. 3, 1890, pp. 38-41).

The present authors spent three days at the Grand Canyon, December 18-20, 1919. Although our time was short we covered as much ground and of as great variety as could well be done in that period. We arrived early in the morning of the 18th. That afternoon, through the courtesy of Mr. W. F. Peters, Acting Superintendent of the Grand Canyon National Park, we were enabled to join a party he was conducting into the Canyon. We descended the Hermit's Rest Trail to Hermit's Rest Camp, where we spent the night. The next day we rode some nineteen miles up the Canyon on the Tonto Trail, to the junction of the latter with the Bright Angel Trail, by which we returned to El Tovar. Our last day was devoted to walks along the rim.

Early in the morning of the 18th there had been a rainstorm, but before noon the sky cleared and it remained clear during the rest of our stay. On the rim the temperature fell below freezing at night, but the snow melted in the sun during the day. The air was appreciably warmer down in the Canyon. There was considerable snow on the ground on the rim, and extending downward into the Canyon over the first mile or so of the trail.

Astur atricapillus atricapillus. Eastern Goshawk. An adult bird seen December 18, at close range, at the rim of the Canyon near the Hermit's Rest Trail.

Dryobates villosus leucothorectis. White-breasted Woodpecker. A single bird, observed near El Tovar Hotel, December 20.

Dryobates scalaris cactophilus. Cactus Woodpecker. A woodpecker was seen December 19 on the Tonto Trail, about midway between Hermit's Rest Camp and the Bright Angel Trail, flying from one agave stalk to another. The surroundings and the appearance of the bird were both so strongly indicative of this species, that although this is no more than a "sight identification", I have no doubt as to its accuracy. There is a record from a point still farther northwest in Arizona: confluence of Beaverdam Creek and the Virgin River (Fisher, N. Am. Fauna, no. 7, 1893, p. 47).

Colaptes cafer collaris. Red-shafted Flicker. Two or more seen and heard near El Tovar Hotel.

Cyanocitta stelleri diademata. Long-crested Jay. Seen at various points along the rim between El Tovar Hotel and the Hermit's Rest Trail.

Aphelocoma woodhousei. Woodhouse Jay. Not as numerous as the last mentioned species, or at any rate not so conspicuous. Not more than three or four observed.

Nucifraga columbiana. Clarke Nutcracker. While not abundant, some individuals of this species could be seen about the hotel and other buildings at any time.

Cyanocephalus cyanocephalus. Pinyon Jay. Seen and heard at various points

along the rim; one bird noted on the Hermit's Rest Trail about a thousand feet below the rim. There was a large flock (we estimated its size at two hundred at least) feeding about some stables not far from the hotel, and these birds were so tame as to permit observation at very close range.

Passer domesticus. English Sparrow. Fairly abundant about the hotels and other buildings at the railroad terminus. Not seen elsewhere.

Spinus pinus. Pine Siskin. Seen at several points along the rim; not more than eight or ten all told.

Junco hyemalis hyemalis. Slate-colored Junco. One male bird seen December 20 in a flock of black-headed juncos. It was observed at close range with field glasses.

Junco oreganus shufeldti. Shufeldt Junco. Black-headed juncos of the *oreganus* type were fairly numerous in the woods along the rim of the Canyon. Presumably they were mostly of this subspecies, which is a common winter visitant throughout the state.

Bombycilla garrula. Bohemian Waxwing. As we stepped from El Tovar Hotel the morning of our arrival, December 18, almost the first thing encountered was a flock of these birds. Our attention was first attracted by the hissing call-note, and a moment later a flock of fifteen Bohemian Waxwings swept past. They disappeared for a few minutes, but came in sight again a little later and settled in a juniper nearby. There they set to work gorging themselves upon mistletoe berries, quite unmindful of our presence. We approached cautiously until we were almost directly under the tree. Then some of the birds, moving about, came still nearer, until there were several within six or eight feet. We were close enough to all in the flock to be able to distinguish the waxen tips to the secondaries, as well as the distinctive chestnut-colored under tail coverts and the white or yellow wing markings. We watched them for ten minutes or more, when something startled them and they left.

There has been no record of the observation of the Bohemian Waxwing in Arizona since Cooper secured the one and only specimen taken in the state up to the present time. That was at Fort Mohave, January 10, 1861 (Cooper, Proc. Calif. Acad. Sci., II, 1861, p. 122). Considering the small amount of field work that has been done in northern Arizona, especially in winter, it may well be that this species is of relatively frequent occurrence there during the winter months.

Salpinctes obsoletus obsoletus. Rock Wren. Ten or twelve seen all told. Observed at Hermit's Rest Camp, along the Tonto Trail, and on the rim.

Catherpes mexicanus conspersus. Canyon Wren. One seen at Hermit's Rest Camp and two or three more along the Tonto Trail. The call note was heard constantly when the birds were encountered, but the loud song was not given at any time.

Sitta carolinensis nelsoni. Rocky Mountain Nuthatch. Several seen in the timber along the rim.

Sitta pygmaea pygmaea. Pigmy Nuthatch. Seen in the timber on the rim. No large flocks were encountered, not more than three or four individuals together.

Baeolophus inornatus griseus. Gray Titmouse. Four pairs seen in the woods within a mile of El Tovar Hotel. Titmouse call-notes were heard at several points along the Tonto Trail, down in the Canyon, but the birds were not seen.

Penthestes gambeli gambeli. Mountain Chickadee. More common than the last mentioned species. A number were seen near the hotel, and others at various points along the rim.

Planesticus migratorius propinquus. Western Robin. A single Robin was seen at the Indian Gardens, near the junction of the Tonto and Bright Angel trails.—H. S. Swarth and Winifern W. Swarth, *Berkeley, California, February 7, 1920.*

An Albino Brown Towhee.—An albino Brown Towhee (*Pipilo crissalis carolae*) was observed January 27, 1920, on Rocky Hill, just two miles east of Porterville, California. It was with others of the same species, one of the most numerous birds to be found there.

On the same day and near the same place an adult White-tailed Kite (*Elanus leucurus*) was seen. The thickly wooded bottom lands of the Tule River are nearby, no doubt accounting for the presence of this bird in this particular place. They are occasionally seen there and are called by the cattle men "devil hawks".—L. W. Hudson, *Porterville, California, January 30, 1920.*

EDITORIAL NOTES AND NEWS

We are struck with the cogency of the suggestion made by Mr. Leverett Mills Loomis in the January, 1920, *Auk* (p. 91); namely, that the projected "Systema Avium" might well serve as a new starting point for ornithological names. This could be done arbitarily, just as with Linnaeus, 1758, by action of the International Zoological Congress. Majority vote of representatives of the ornithologists of the world would probably suffice to initiate such action. Surely everyone yearns for permanency of names!

The report of the Business Managers for 1919 was presented to both Divisions of the Cooper Ornithological Club at the February meetings and indicates a healthy condition of the Club's finances. The cost of producing THE CONDOR was the greatest in its history, and the receipts were greater than in any year except 1916. Avifauna number 13 was issued and has met with ready and extensive sale. Sales of back numbers and complete files were never so active as now, and applications for membership constantly exceed the lapses. A total of $4167.50 has already been pledged for the Endowment Fund and $1460.00 of this amount has been received. Contributions to this fund, more than almost anything else, spell encouragement to business managers and editors alike, since it denotes a substantial appreciation of past efforts in behalf of the Club and a desire to stabilize and perpetuate the foundation on which, in the last analysis, the productivity of the organization must stand, namely, money to print and distribute such contributions as from time to time become available.

We received a gratifying number of replies to our request for editorial "ideas" in the last November CONDOR, enough to show that a good many persons are decidedly alive to the interests of our magazine. To sum up, opinion seems pretty well agreed that the most interesting feature of THE CONDOR is the "Field and Study" department, in other words, that, upon receipt of an issue, the brief "Field and Study" items are read first. Second in point of interest are declared to be the personal biographies, and third, the accounts of life histories of particular birds. Last in general interest comes the "annotated list". Our policy in the future will be modified in a measure by the returns obtained. But we will continue to publish lists, when of decided merit, and other matter, such as descriptions, which are primarily of scientific importance. It is the function of THE CONDOR to serve as a medium for recording ornithology, as well as to furnish articles of a "readable" character. Then too, the Editor must be controlled largely in the kind of material he presents by the kind and quantity offered. The ideal situation is where a large assortment is available, from which he can select the best.

A "Pacific Northwest Bird and Mammal Club" has been organized, with headquarters in Seattle. The objects of this club are "to promote social and fraternal relations among the working ornithologists and mammalogists of Washington, Oregon, British Columbia and Alaska", and "to promote interest in the scientific study of birds and mammals within the region named". There is certainly need for a club of just this sort, and there are already located in the Puget Sound district a considerable number of active naturalists to give the undertaking impetus. We predict a successful future for it. Persons desiring further information concerning this organization should apply to Mr. F. S. Hall, Director of the State Museum, University of Washington, Seattle.

Mr. Ernest P. Walker, until last fall stationed at Wrangell, Alaska, where he was Inspector under the United States Bureau of Fisheries, has now entered the service of the Biological Survey, United States Department of Agriculture. He is located at Phoenix, Arizona, and is serving as Warden under the Migratory-Bird Treaty and Lacey acts.

PUBLICATIONS REVIEWED

A REVISION OF THE SUBSPECIES OF PASSERCULUS ROSTRATUS (CASSIN). By Harry C. Oberholser. The Ohio Journal of Science, vol. XIX, no. 6, April, 1919, pp. 344-354.

There are features quite apart from the systematic treatment of the species here considered that render this paper one of exceptional interest to Californian bird students. The abundance of the Large-billed Sparrow in its winter home in southern California has made still more tantalizing the mystery of its breeding range, for it seemed evident that the nesting grounds, though unknown, could not lie so very far from our doors. While, as regards the subspecies *Passerculus r. rostratus*, the author can contribute nothing to our knowledge of the nest or eggs, he maps the breeding range on the basis of specimens taken during what must be the nesting season.

Three subspecies of *Passerculus rostratus* are here recognized, *P. r. rostratus*, breeding at the head of the Gulf of California, in Lower California and Sonora; *P. r. guttatus*, breeding on the San Benito Islands, central western Lower California; and *P. r. halophilus*, breeding on the mainland of central

Chas. J. Wilson A. S. Kibbe J. Dixon L. Little H. G. White H. W. Carriger T. I. Storer C. C. Van Fleet H. M. Hansen D. McLean R. Hunt R. Wheeler A. B. Howell Mrs. Kelly H. C. Bryant L. Austin Mrs. Wood J. S. Cooper C. C. Lamb J. Grinnell Miss O. Swezy C. B. Lastreto Mrs. Wheeler Mrs. E. Mead Mrs. J. Grinnell C. Wright Mrs. Howell Miss I. Thompson Miss McClelland Mrs. Schlesinger Mrs. H. S. Swarth Miss E. Evermann Mrs. B. W. Evermann B. C. Bell H. S. Swarth Mrs. A. S. Allen J. Mailliard

Fig. 14. NORTHERN DIVISION COOPER CLUB MEETING, AT MUSEUM OF VERTEBRATE ZOOLOGY, BERKELEY, JANUARY 15, 1920

G. Chamberlin J. W. Mailliard E. Adams H. R. Taylor O. P. Silliman U. S. Clark R. L. Wilbur D. A. Cohen R. H. Beck W. O. Emerson
R. C. McGregor W. H. Osgood C. Barlow R. Arnold H. R. Painton

Fig. 15. NORTHERN DIVISION COOPER CLUB MEETING HELD IN 1895, PROBABLY THE ONE AT SAN JOSE, JANUARY 5 OF THAT YEAR.

western Lower California. *Passerculus sanctorum* is regarded as a synonym of *P. r. guttatus*.

The migrations performed by *rostratus* and *guttatus* are pointed out by the author as "almost, if not quite, unique" among North American birds, for the movement is both north and south from the breeding ground to the winter home. The travels of *rostratus* are especially curious. "Part of the individuals of the typical subspecies winter in its breeding area, but the great majority begin, by the middle of August, to leave their breeding ground, whence they move in various directions, some of them southeast along the Sonoran coast, others due south into Lower California, others west to the northern part of Lower California, and still others northwest to the coast of southern California, reaching the extremes of their winter range almost simultaneously, and regularly becoming common at Cape San Lucas and in Los Angeles County, California, by at least the first of September." There is no movement, however, directly north or to the northeast.

It is a pity that so important a paper should be published in a journal that is seen by so few ornithologists. Californian bird students in particular will be deeply interested in this study, but most of them will doubtless have difficulty in finding a copy of the publication.—H. S. Swarth.

MINUTES OF COOPER CLUB MEETINGS

SOUTHERN DIVISION

December.—The regular monthly meeting of the Cooper Ornithological Club, Southern Division, was held at the Museum of History, Science and Art, December 23, 1919, at 8:00 p. m. President Miller officiated, with other members in attendance as follows: Messrs. Barnes, Chambers, Brown, Daggett, Dickey, Esterly, Hanaford, Hoffman, Palmer, Robertson, Trenor, van Rossem, and Wyman, and Mrs. J. T. Allen. Mrs. Wyman and Master Alden Miller were visitors.

Minutes of the November meeting were read and approved, while an accumulation of minutes of the Northern Division was read by title only. On motion by Mr. Robertson, seconded by Dr. Esterly, the Secretary was instructed to cast an electing ballot for those parties whose names were presented at the previous meeting. New applicants were: George Tonkin, Boise, Idaho, by Stanley G. Jewett; Turner E. McMullen, Camden, New Jersey, by H. Arden Edwards; and the following by W. Lee Chambers: Albert D. McGrew, Seattle, Wash.; R. A. Powell, Fresno; F. H. Girvin, Brawley; Horace Gunthorp, Topeka, Kansas; Ralph Hoffmann, Santa Barbara; Frank Richmond, El Centro.

Names from the Northern Division, for approval, were: Francis Harper, Washington, D. C.; Raymond Wheatley Moore, Washington, D. C.; Mrs. Ernest B. Price, Piedmont; H. M. Harrison, Cambridge, Maryland; Lyle R. Fletcher, Norton, Kansas; Isabel Ames, San Francisco; Miss Elizabeth Hendren, Occidental; Mrs. E. C. Pitcher, Haywards; Miss Bessie M. Lander, Exeter; Mrs. Edwin B. Mead, Berkeley; Miss Susan H. Mackay, Berkeley.

On motion by Mr. Daggett, seconded by Mr. Robertson, that the chair appoint a committee to nominate officers for the coming year, President Miller named Messrs. Dickey, Chambers and Brown.

The following resolution, already adopted by the Northern Division, was read, and on motion by Mr. Dickey, seconded by Dr. Esterly, was adopted:

Resolved, that a permanent endowment fund be created by the Cooper Ornithological Club out of all payments for life memberships, heretofore received or hereafter to be received, and out of all moneys received for the purpose of such fund.

And be it further resolved that a committee of three members, namely, Messrs. J. Eugene Law (Chairman), W. Lee Chambers, and A. Brazier Howell, be hereby authorized to solicit, collect and invest said moneys for this endowment, the securities to be vested in the name of one or the other of the committee as "Trustee for the Cooper Ornithological Club." Said committee shall make an annual report of such funds as shall have been collected, to include a statement of the disposition of both principal and interest.

And be it further resolved that the income from such endowment fund shall be used for publication purposes in connection with The Condor and Pacific Coast Avifauna series."

Formal business ended, there followed the usual period of general discussion, comparison of recent observations, and inspection of study skins, during which Judge Barnes reported success in breeding the Blue Goose in captivity. An interesting horned owl, taken in a most extraordinary manner, was exhibited by Mr. van Rossem. Adjourned.—L. E. Wyman, *Secretary*.

For Sale, Exchange and Want Column.*—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. Lee Chambers, *Eagle Rock, Los Angeles County, California.

Wanted—A man to join me on a trip to Hudson Bay region next season; either shares, full partner, or salary with no part of spoils. Must make a good bird skin. Also have for sale the nine rare volumes of Ibis, 1874 to 1883, and the proceedings of the Zoological Society of London, 1860, bound. A few copies left of my "Birds of Virginia", cash; or will exchange for bird skins or sets of eggs. Also desire to purchase first class collection of Western bird skins and sets of eggs.—Harold H. Bailey, *319 54 St., Newport News, Va.*

Wanted—Fleas from birds' nests. For particulars apply to Hon. N. Charles Rothschild, *Arundel House, Kensington Palace Gardens, W. 8, London, England.*

For Sale—Ornithologist and Oologist, vol. 6 all but numbers 8, 10 and 11; vols. 7 to 17, complete, index lacking in 7, each volume well bound; vol. 18, unbound. Also vol. 7 except number 22 (Nov., 1882) and index; and vol. 8 except numbers 4, 11 and 12. Osprey, vol. 1, numbers 1, 3, 7 and 9; vol. 2, numbers 1, 3, 6 and 7; vol. 3, number 1. Wanted to purchase—Oologist, vols. 14 to 31, and 34, unbound, or various numbers in these volumes. Wilson Bulletin, nos. 1 to 13, 15 to 29, 35 to 37, 42, 44, 46 to 66, 68, 69, 82, 83, 85, 86 and 88 to date.—R. W. Williams, *Cosmos Club, Washington, D. C.*

Wanted—Brewster's "Birds of the Cape Region of Lower California"; Belding's "Land Birds of the Pacific District"; Lattin's "Oologist", vol. 4, and vol. 6, no. 4.—H. S. Hathaway, *Box 1466, Providence, R. I.*

For Sale—Double-barrel 20 gauge Fox hammerless gun, absolutely new, best condition, with case, reloading tools and rod, $35. An auxiliary for a 38 extra long shell fitted for this gun included for $5.00 extra.—F. M. Dille, *Valentine, Nebraska.*

For Sale—Six copies "History of the Birds of Kansas", by N. S. Goss; 692 pp., 35 plates, as new; $5.50 each, delivered.—Horace Gunthorp, *1525 College Ave., Topeka, Kans.*

Wanted—Ridgway's "Birds of North and Middle America", vols. 2 and 3; paper covers preferred; must be in good condition. Will pay reasonable cash price.—F. Seymour Hersey, *Taunton, Mass.*

Wanted—North American Fauna, nos. 4, 5, 7, 11, 14, 15, 16, 17, 20, 21, 23, 25, 27, 28, 29.—Laurence Huey, *1703 Clay Ave., San Diego, Calif.*

Treble exchange value in other material for any sets of the raptores, my take, collected between 1895 and 1903. Any one desirous of returning such sets kindly mail copy of data to—Milton S. Ray, *23 Belmont Ave., San Francisco, Calif.*

Wanted—Complete sets with all indexes: Ornithologist and Oologist, Nidiologist, Osprey, Young Oologist, Western Ornithologist, Birds, Humming Bird; and Journal Maine Ornith. Soc., vol. vii, no. 2, to end. State cash prices. Give condition and whether bound or not.—Dr. Casey Wood, *Stanford University P. O., California.*

The California Museum of Vertebrate Zoology would like to correspond with any students interested in the collection and preparation of osteological specimens of birds, mammals, and reptiles. Queries with regard to field and laboratory preparation of specimens will have careful attention. Correspond with J. Eugene Law, *Curator in Osteology, Museum of Vertebrate Zoology, Berkeley, California.*

JUN 17 1920

THE CONDOR

A Magazine of Western Ornithology

Volume XXII May-June, 1920 Number 3

COOPER ORNITHOLOGICAL CLUB

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~~Issued May 22, 1920~~ *Issued June 8, 1920*

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THE CONDOR

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Volume XXII **May-June, 1920** **Number 3**

[Issued June 8, 1920]

THE HOME LIFE OF THE WESTERN WARBLING VIREO

By HENRY J. RUST

WITH ELEVEN PHOTOS

NESTS of the Western Warbling Vireo (*Vireosylva gilva swainsoni*) placed at elevations low enough for an intimate study of the home life and for photographic purposes are not often found in this vicinity (northern Idaho), only two having come under my observation in a number of seasons afield.

The first nest was completed when found, June 22, and was discovered by the scolding note of the female, she being quite near the nest when I approached. It was suspended from the fork of a small spiraea bush five feet from the ground, back about ten feet in dense shrubbery along an old roadway on the north slope of Tubb's hill. I visited the nest as often as possible, hoping to obtain data on the life history of the bird.

Everything went along well until the three young were eight days old. On the ninth day of their existence the nest was torn from the crotch and found lying on the ground nearby; there were no signs of the young, and the parent birds were some distance away. Owing to the lateness of the season, July 15, probably no further effort toward raising a brood was made by this pair of vireos.

May 24, of last year, while passing along the old roadway about one hundred yards from where I found the nest first mentioned, I heard a female Western Warbling Vireo scolding and soon located her. A bit of plant down from a willow catkin in her bill suggested nest building, and after a short search I found the first start of the nest in a fork of a small willow. It was four and one-half feet from the ground, and consisted of several blades of dry grass woven over and under, back and forth across the crotch, the loose ends drooping, with several bits of willow down adhering.

In the afternoon of the next day the rim was finished and rounded out in shape to support the completed nest; some of the loose ends were woven in and out, with a few additional dry grass stems, bits of string and willow down, this forming a part of the body of the nest (fig. 17). Two days later, the 27th, the

nest was completed on the outside. When visited on the 30th the lining was in place, consisting of dry grass stems interwoven with ten or twelve strands of horsehair. The nest as completed measured as follows: Diameter outside, 2½ by 3 inches; length 3 inches; diameter inside, 1½ by 2 inches; depth 1¾ inches.

Fig. 16. Old roadway on Tubb's Hill, near Coeur d'Alene, Idaho. The summer home of the Western Warbling Vireo.

On dissecting the nest after the young had flown, the following materials were noted, besides the dry glass blades and stems already mentioned: Three pieces of white string, 14, 15, and 24½ inches in length, respectively; also a number of small white threads of various lengths up to 6½ inches; 35 detacha-

ble bits of down from willow seeds, with many more woven in securely; several bits of lichen (*Alectoria fremontii*); small strips of ninebark (*Opulaster pauciflorus*); three small pieces of old discolored cotton; and, in the rim, bits of matted cow hair. There being four houses less than one hundred yards from the nesting site, the string, horsehair and cotton were no doubt obtained on or near those premises; the balance of the material could have been secured a few feet from the nest. In weaving the long piece of string, one end must have dropped down, and in picking up the loose end it had been passed under a

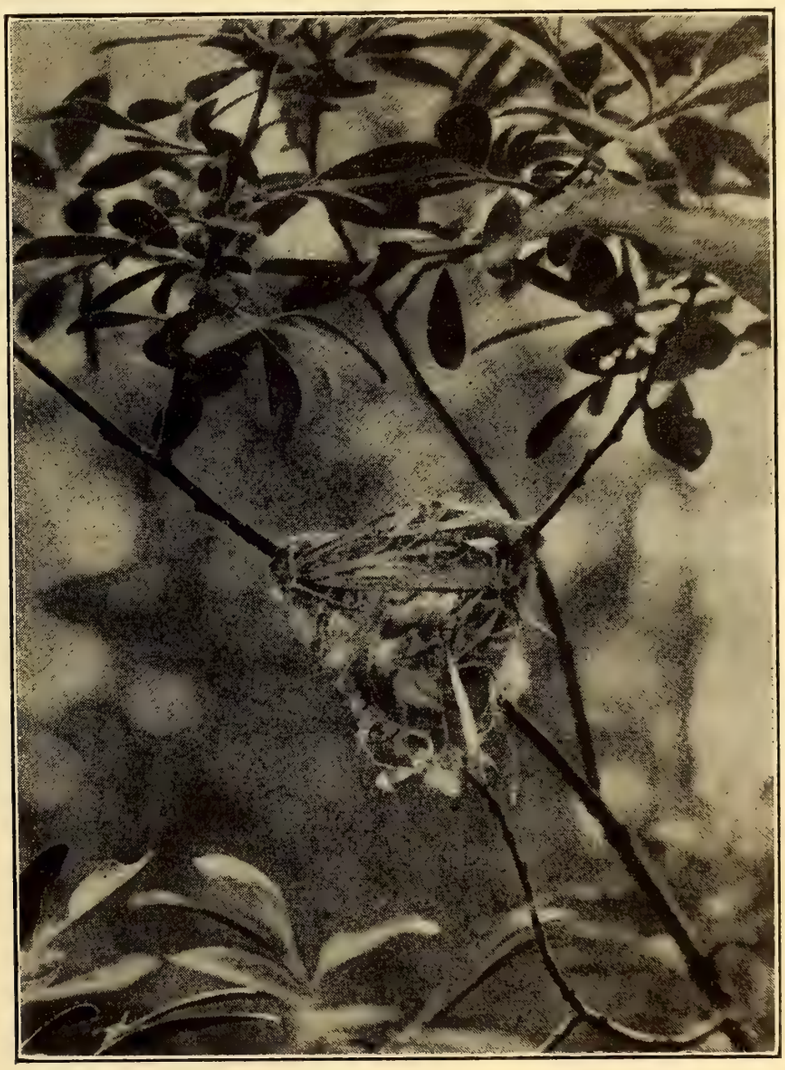

Fig. 17. Nest of Western Warbling Vireo, under construction for two days. The rim is finished first.

small twig below the nest, forming a long hanging loop that remained in place during the occupancy of the nest, as shown in the photos.

The bulk of the nest, if not the entire structure, was built by the female. The male remained in nearby trees, singing at regular intervals, but he was not noted helping at any time. As in the case of the former nest, several days passed after it was finished before any eggs were laid. The first egg in the second nest was noted on June 4. Visited late in the afternoon of the 7th, the nest contained four eggs, the complete set.

The young willow in which the nest was placed was growing in a small

opening about thirty feet from the edge of the old road, and was surrounded by a profusion of green shrubbery that was much to the liking of the vireos. On only two occasions did I note either of the parent birds more than forty yards away from the willow after the nest was completed, until the young had flown. I could not help but note the pretty setting for such an interesting bit of home life. The ground was carpeted with a thick growth of wild sweet pea (*Lathyrus pauciflorus*) which was in full bloom and scenting the air with a sweet odor. One side of the opening was enclosed with buckbrush (*Ceanothus sanguineus*) and ninebark in bloom; beyond there were several large yellow pines and Douglas fir trees; on the other sides were service berry bushes, wil-

Fig. 18. Nest of Western Warbling Vireo containing the full set of eggs.

lows, and ocean spray (*Schizonotus discolor*) which extended to a large grove of pine and fir trees in the near distance. In and out through the surroundings were bushes of the large flowering wild rose in full bloom, adding a touch of color to the masses of green and white.

In order to view the nest it was necessary to reach the small opening. If the female was incubating she quickly became aware of my presence, and at a distance of about five feet, would flit from the nest to a nearby bush, to begin the usual vireo scold. The first few notes never failed to enlist the sympathy of any feathered neighbors who happened to be near, but after a brief scrutiny

they would retire and leave the female vireo to her fate. She would return to the nest as soon as I withdrew from sight.

If my visit happened in the morning, and the male was incubating, I could almost touch the nest before he would leave. Then, alighting on a small dead fir tree nine feet from the nest, he would burst into song. This small tree was his singing tree, and from this tree he nearly always approached the nest in the same manner, first singing from the tree, then moving to a perch on a shrub near and above the willow, and then to the twig supporting the nest. During incubation he would sing once near the nest, then proceed to cover the eggs, and as soon as he was comfortably settled down he would sing regularly at

Fig. 19. Male Western Warbling Vireo on the nest, singing while performing the duty of incubation.

short intervals. Not being able to secure any photos of the female without constructing a blind, I contented myself with making pictures of the male, a willing subject.

At the end of twelve days the four white eggs with their markings of black specks gave place to four naked, dark yellow-colored young; when first seen all were huddled up in a pile in a corner of the nest. I was able to observe only the male parent feeding at close range, and I was surprised to note the care he took to feed the helpless young before they were strong enough to raise their heads for food.

Fig. 20. Male Vireo in an outburst of song on the edge of the nest after the eggs had hatched. The tongue is not visible though the bill is held wide open.

Fig. 21. Male Vireo examining the nest. One young bird had just died and had not yet been removed.

Fig. 22. Male Vireo feeding the young.

Fig. 23. Male Vireo inspecting his family; in apparent concern over the one weakling.

The young gained in size and strength rapidly. After they were several days old the male would sing from the tree as before, then fly direct to the nest and perching on the brim, would sing as if he would burst his throat. On one occasion a male Cassin Purple Finch seemed to share his joy, and, alighting on the singing tree, joined in and sang his best. The same incident occurred again when the young were a week old, but this time the male vireo seemed to resent the intrusion and drove the finch away in a hurry, chasing him some distance.

When the young were five days old, I noticed the male vireo looking into the nest after each feeding, and on investigating found one of the young dead in the bottom of the nest. I at once proceeded to remove the remains, and in so doing became aware of the advantage of horsehair woven in the nest lining.

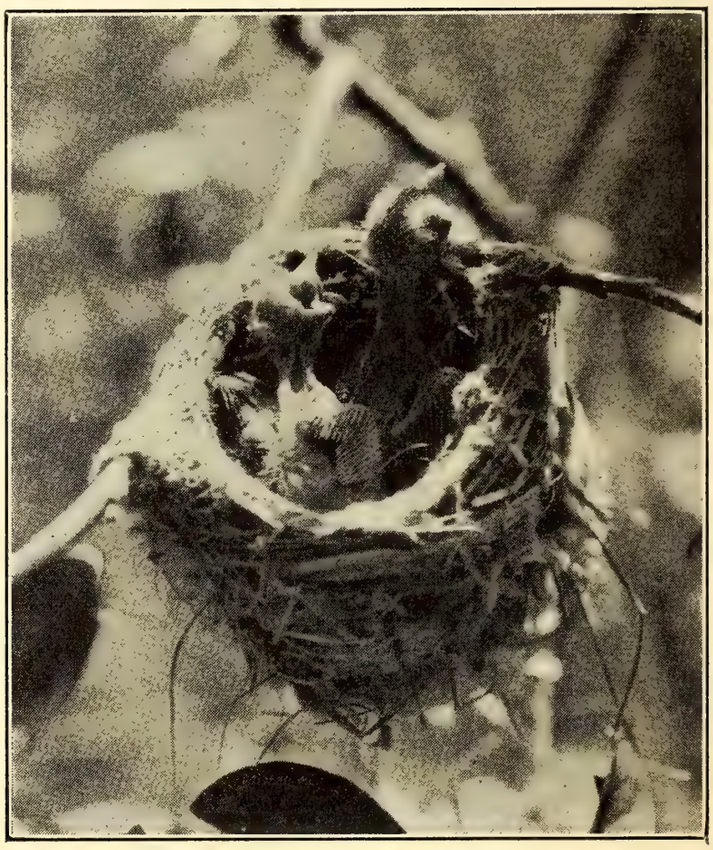

Fig. 24. Young Vireos, five days old.

The young bird's claws were closed tightly over several strands, and the interior of the structure was considerably torn up before I managed to remove the dead bird. To all appearances the young bird had been dead but a short time, but it was infested with a number of large maggots and was in such a condition that I made no effort to save it for later examination. I kept close watch of the young from then on, and two days later another showed signs of weakness. I failed to find any signs of maggot infestation, and the weakling began to improve slowly but was much smaller than the two others.

The nest was kept very clean, both parents assisting in the task. At the age of nine days the eyes of the two stronger young were open, but the weakling was several days later in receiving its sight. In securing food for the young the female gathered much larger insects than the male, often coming in

with a good sized caterpillar dangling from her bill. When I was near she would fly back and forth six or eight feet from the nest and scold until the food was either lost or she ate it, I never could tell which. She never fed the young while I was near.

The male would often dart from his perch in the dead fir tree in the manner of a flycatcher, and snap his mandibles a number of times as if trying to catch some passing insect, but I failed to note any success. Again he would occasionally hover under a green leaf in a manner similar to a kinglet, but when he really thought it was feeding time it was a small matter for him to obtain a mouthful by searching nearby twigs or leaves. In securing large-

Fig. 25. THE NOON-DAY REST.

sized insects he would strike his bill against his perch, soon killing them, often eating them himself and securing smaller ones for the young. The male would fly from a shrub near the willow direct to the nest and feed the young regularly when I was standing less than four feet away.

At the age of twelve days the young were well feathered and able to perch on the edge of the nest with a little assistance on my part. The parents became very much excited when they saw two of the nestlings out on the edge of the nest and uttered similar chirping notes trying to coax them away. On the

fifth day of July they had their pictures taken for the last time; on the sixth the nest was deserted. Two days later I found the parent birds in some dense brush about seventy-five yards from the nest, but could not locate any of the

Fig. 26. Ready to leave the nest. Young Western Warbling Vireos fifteen days old.

young. After a severe scolding from the parents I retired and left them to their ways in peace.

Coeur d'Alene, Idaho, February 10, 1920.

AUTOBIOGRAPHICAL NOTES

By HENRY WETHERBEE HENSHAW

(*Concluded from page 60*)

VISIT THE HAWAIIAN ISLANDS

IN DECEMBER, 1894, still in search of the priceless boon of health, I sailed for the Hawaiian Islands on the iron barkentine, "Annie Johnson", and after a delightful voyage of 18 days landed at Hilo, Island of Hawaii, which was to be my abiding place for several years. I thus was present during the exciting days of the insurrection which occurred in January, 1895. This was quickly suppressed, being practically confined to Honolulu.

After a residence of several years in the Islands, it occurred to me that, as I enjoyed the protection of the island laws and was accorded all the privileges of a citizen, I ought to assume the duties that pertain to citizenship. Accordingly I took the necessary steps to become a citizen of the island Republic, and assumed the not too arduous duties of paying taxes, serving on juries, and the like. The Republic, however, proved short-lived, for the islands were formally annexed to the United States as a territory July 7, 1898, when automatically I again became a citizen of the United States.

TAKE UP PHOTOGRAPHY

My strength returning slowly, I devoted much time during the first part of my stay in Hawaii to photography, which was a pursuit entirely new to me, as I had taken it up only a few months before, chiefly for the purpose of securing good photographs of the California Indians. The palms and strange forms of vegetation, the waterfalls, the picturesque coast, and the fleecy clouds of these sub-tropical islands all conspire to arouse the photographer's enthusiasm. Just before leaving California I had learned to use platinotype paper, which is unexcelled for permanency and for artistic effects, and I was the first, I believe, to introduce the use of the paper into the islands.

Continuing my photographic work, one day I awoke to find myself famous as a photographer, and was induced by my friends to place the results of my handiwork of the camera on sale both in Honolulu and Hilo, the result being the sale of some thousands of prints, which are now scattered all over the world. I look upon my adventure in photography with great pleasure, and regard the results as a partial but grateful return for the delightful years spent in this island garden spot, of the many friends it was my privilege to make, and their innumerable acts of kindness and hospitality. Here, where no man is treated as a stranger, but always as a welcome guest, is found the kindliest climate in the world, beautiful scenery on all sides, and a contentment with life unknown in less favored regions.

I may add that while these lines are being written my Hawaiian negatives to the number of over 300 have been purchased by George Shiras 3rd, and by him donated to the National Geographic Society, by which they will be utilized, as I hope, for many years to come, for illustrative purposes.

BECOME ACQUAINTED WITH BROTHER M. NEWELL

Soon after reaching Hilo I made the acquaintance of Brother Matthias (M. Newell), who was a member of the Catholic Brotherhood and had long lived

in the Islands. Although he had made no very extensive collection of Hawaiian birds he was much interested in the subject, and was always ready to impart any information he had in respect to their haunts and habits. He presented me with the first and only specimen I ever saw of the shearwater (*Puffinus newelli*), which he had obtained on the island of Maui, and which I described as new. He still lives in Hilo, where he is Inspector for the Division of Plant Inspection of the Territory, and still maintains his interest in birds.

HAWAIIAN BIRDS AND THEIR FOREST HOME

As soon as strength permitted I abandoned the camera largely and began to find my way into the dense tropical forests, much of which is impassable except by cutting one's way through the tangled jungle of ferns, creeping vines, and shrubbery, or by the infrequent trails made by the coffee planters. Hawaiian birds had been studied and collected by several before my time, notably by the English collectors, R. C. L. Perkins, Scott B. Wilson, and Henry Palmer, the latter of whom, with an assistant, collected for the Honorable Walter Rothschild.

These three collections each furnished the occasion of a valuable treatise on Hawaiian birds, and the volumes issued by Palmer and Rothschild were beautifully illustrated. These, however, because of their cost, were accessible only to the few, and after devoting much time for several years to collecting and studying Hawaiian birds, especially those of the large Island of Hawaii, I wrote the little octavo volume of 146 pages entitled "Birds of the Hawaiian Islands", which was published by G. Thrum of Honolulu in 1902. By this means I hoped to leave some tangible evidence of my stay in the Islands, and, much more important, to place within reach of all a dependable account of the island birds. Subsequently my collection of Hawaiian birds was acquired by the Bishop Museum, which seemed to me its natural abiding place.

The indigenous birds of the Hawaiian Islands are unique in many particulars, both of structure and habits. They shun the neighborhood of settlements, and live in the deep forests far from man and his works, and thus one might spend a lifetime in the islands near the coast and never see a Hawaiian bird. The forest proper on the largest island of the group is, indeed, a uniform distance of about three miles from the ocean, this broad strip having been cleared of its original growth for agricultural purposes, particularly the cultivation of sugar cane. The forest undergrowth is dense, the trees tall and covered with epiphytic vines and shrubs, so that collecting under these circumstances is exceedingly difficult.

Nor is progress in these forests without real danger. Aside from the risk of losing one's way in this sea of vegetation, there are innumerable "blow holes" in the lava, many of which are so masked with ferns and grass that it requires the greatest care and watchfulness to avoid them, while to fall into one would be almost sure death. Under such conditions a good retriever is worth his weight in gold to the collector, and many a rare bird my own setter, Pilikia, saved for me and science.

BIRD PROTECTION IN HAWAII

When I first reached the islands there were practically no laws affording any real measure of protection to Hawaiian birds. Subsequently I drew up a law which was introduced into the Legislature in the form of a bill but failed of passage. Later, however, the same law with modifications was enacted, and

at present the island birds enjoy adequate protection so far as the law can afford it. They appear to stand in greater need of protection than the birds of mainland countries, possibly because, owing to their sedentary habits and the lack of competition during their many centuries of occupancy, they have become unable to cope with changed conditions, as the partial clearing of their native forests and the introduction of foreign species such as the mynah and others. Be the cause what it may, not a few of the island birds have become extinct within the memory of man, and others appear to be on their rapid way to the same sad fate. As bearing upon this point I may quote from a letter of January 1, 1919, from Brother Matthias, referring more particularly to my old collecting grounds in the districts of Hilo and Puna, Hawaii. In these, where, during the decade from 1894 to 1904, I found certain species numerous, he states that of late years the island birds have greatly diminished in numbers for no very obvious reasons, and he expresses the opinion that "Hawaiian birds are doomed and fifty years hence most species will be extinct."

HAWAIIAN LAND SHELLS

During my prolonged stay in the Islands I became much interested in the curious and beautiful tree and land shells, chiefly of the genera Achatinella and Amastra, which are famous among conchologists the world over. These genera are represented by upwards of 200 so-called species or varieties, the exact number varying widely according to the individual opinions of the different authorities. They were first brought to the attention of the outer world by Captain Dixon, who, on the occasion of his visit in 1786 found the natives wearing shell leis or necklaces, and who carried some of them back to England. The Achatinellas live chiefly among the leaves of trees, and the gathering of these gems of the shell world is to the island boy what egg collecting is to the boy of other regions.

Immense numbers of them have been gathered and have found their way into the hands of scientists all over the world, and much has been published on them and in many languages. The wide differences in form and color they display, the tendency of the several forms to coalesce, and the facts of their local distribution all unite to make their study intensely interesting and highly important from the evolutionary standpoint. I made an excellent start towards a collection of these beautiful objects (a lifetime might easily be devoted to the subject) with the view ultimately of publishing on them, a plan which so far has not materialized, with the exception of a short paper contributed to the Journal of Malacology (xi, 1904, pp. 56-64), entitled "On certain deposits of semi-fossil shells in Hamakua District, Hawaii, with descriptions of four new species."

RETURN TO THE MAINLAND

In the spring of 1904, finding myself once more in good working condition, I returned to California, where I spent several months. Later I visited Massachusetts, and early in 1905 I found myself once more in Washington and eager for work.

ENTER THE BIOLOGICAL SURVEY

After passing a civil service examination, I was appointed Administrative Assistant in the Biological Survey June 1, 1905, becoming its Assistant Chief in December of the same year, thus again taking up biological work which I had abandoned in favor of Anthropology so many years before. My pleasure at

being connected with the Survey was greatly enhanced owing to the fact that most of my associates were old and tried friends, to work with whom was like the renewing of old ties.

From this time on my duties lay chiefly in the administrative field, and included many subjects of interest and importance. From the first moment of my connection with the Survey I was impressed by the need of pushing all projects having a distinct economic bearing, as the boll weevil investigations, the food of birds in its relation to agriculture, the economic relations of our mammals, especially certain of the rodents, the protection of the waterfowl and of insectivorous birds and of large game; and it was to the development of these subjects that I gave most time and thought.

STUDY OF DIATOMS

I had always been interested in the microscope, although I had never done any serious work in the microscopic field, and had, indeed, never owned an instrument other than a pocket lens till in Hawaii when I equipped myself with a really good modern instrument. This I used chiefly in the study of shells, the teeth of mollusks furnishing characters of considerable value in their classification.

When I returned to Washington I found much interest and pleasure during evenings in studying pond life. This is a little world by itself, of inexhaustible interest and beauty, and as completely unknown to the uninitiated person as though he were on another planet. In the course of my investigations in fields microscopic, I made the acquaintance of diatoms, which may be briefly described as microscopic plants, chiefly built of silica, of almost infinite variety of form, and ornamented with bead and scroll work so as to be of surpassing beauty. Diatoms inhabit the waters of the earth, salt and fresh, in inconceivable multitudes, and form the food of many fishes as well as that of numerous small creatures which in their turn are devoured by fish. Hence, small as they are, they are of great economic importance.

Desirous of knowing more about diatoms than appeared in the literature accessible to me, I applied to Dr. Albert Mann, whose life-long studies in this field have made him passed master of the subject. When he showed me some slides of mounted diatoms I politely but firmly declined to believe that they had been mounted by human hands but must, I asserted, have grown in place. A demonstration of his method of mounting these minute creations, many of them less than a thousandth of an inch long, immediately followed and inspired me with such enthusiasm that I did not rest till I, too, was able to make diatom slides, which even the master was constrained to pronounce good. For several years I devoted, and still devote, much spare time searching for and permanently embalming in balsam these "gems of the plant world", until my collection of slides reaches into the thousands, many of the species being rare and others new to science.

During the summer of 1918, in company with Dr. Mann, I spent several weeks at Wood's Hole, Massachusetts, as the guest of the Bureau of Fisheries investigating the diatom life of that interesting region with special reference to the economic value of this water grass, as diatoms may be appropriately called, as food for fish and for such small organisms as constitute fish food.

This work, or rather play, has naturally led to an intimate acquaintance and firm friendship with Dr. Mann, and this I regard as by far the most valu-

able asset resulting from my incursion into the before unknown field of microscopy. I may add in connection with the use of the microscope that it is greatly to be regretted that the class of amateur microscopists of fifty years and more ago has become almost, or quite, extinct. The use of the microscope is no longer a fad of the many but the serious business of the few, and, while the discoveries with the instrument have been of surpassing value to mankind, I cannot but think that even as a plaything the microscope has many valuable lessons to teach and a world of beauty and interest to reveal to the inquiring tyro.

POPULAR TREATISES ON BIRDS

Soon after joining the Survey I dreamed of the possibility of a series of illustrated department bulletins on our common birds, which could be distributed freely over the country as a sort of textbook to foster and stimulate an interest in bird life. The cost of such books of course was the chief obstacle to the project, but in 1912 I was fortunate enough to interest in it the then Secretary, James Wilson, whose enthusiastic support enabled me a few days before his retirement, in March, 1913, to place in his hands the first copy received of Farmer's Bulletin 513, "Fifty Common Birds of Farm and Orchard". I was doubly fortunate in interesting in my scheme Louis Fuertes whose beautiful colored illustrations were chiefly responsible for the enthusiastic welcome the booklet received. This, perhaps, was the most popular bulletin ever issued by the Department, and the first and only edition, of 200,000, was soon exhausted, without beginning to supply the demand.

The little booklet having attracted the attention of Mr. Gilbert Grosvenor, Editor of the National Geographic Magazine, and, being impressed with its educational value to the public, he sought and obtained permission of the Department to republish it in the magazine, under the title of "Birds of Town and Country'. As the state of the department funds was adjudged not to warrant further publications of the same character, Mr. Grosvenor undertook to publish the series I had contemplated, and happily was able to secure the cooperation of Mr. Fuertes. The result was the publication of two other bird papers, "Our American Game Birds", August, 1915; and "Friends of Our Forests", April, 1917. While the series by no means includes all our American birds, a considerable percentage of them is represented, and these the common species most likely to come to the notice of the bird lover and to excite his interest. My dream was thus made a reality by Mr. Grosvenor who deserves the thanks of all bird lovers for these popular bird treatises.

As nearly 12 years of my life (1905-1916) were spent in the service of the Survey, a few words as to its chief work may form a fitting close to these pages.

The investigations of the habits of the English Sparrow, which marked the inception of the Survey, naturally soon expanded into a general study of the food of our birds through an examination of their stomach contents, which time has shown to be the only reliable method. Thanks to the work of the division of Economic ornithology we now know with certainty the nature of the food of several hundred of our native birds, which thus can be accurately classified for legislative purposes, as beneficial, destructive, or both. In this work the United States has won an enviable position, since no other country has ever attempted such studies on anything like the same scale.

One of the most important functions of the Survey is the care and maintenance of the islands and tracts of land set apart as bird reservations, which now number no fewer than seventy, widely distributed through the country. Of this number all but three were designated as refuges during my term of service with the Survey, and it is a pleasure to be able to record the fact that of the whole number all but eight were proclaimed by Theodore Roosevelt during his terms of office as President. May we not consider these bird refuges set apart by his act as a most fitting memorial of one who was ever a most enthusiastic student of all wild life and a special lover of birds?

The number of places where birds may resort and lead their lives in peace has been still further augmented through the generosity of private individuals and societies, who have set apart more important tracts as sanctuaries. From the first, special efforts have been made by the Survey to cooperate with such enterprises, and to stimulate in every way possible a knowledge of, and an interest in, our bird life. This is a work in which there is room for all.

The mammal reservations in charge of the Survey, five in number, have also been very successful, and, come what may, are likely to insure the perpetuation of our biggest game animal, the bison, of our unique antelope, and of the elk and the several species of our native deer.

An important part of the work of the Biological Survey, that of destroying noxious rodents, has been very successful, and recently has assumed large proportions. This includes a war of extermination not only against several species of noxious rodents, including some that are plague carriers, but also against wolves and coyotes, which in recent years have proved enormously destructive to live stock. Because of the success achieved the number of states and stock associations that have entered into close cooperation with the Survey and that have contributed funds to directly assist in the work has recently largely increased. This part of the functions of the Survey is destined to assume still greater importance in the future.

The so-called Lacey Act, which enabled the Government through the Survey to aid the several States in the suppression of violators of the state game laws, was a long step towards the protection of American game birds. Still more important was the Migratory Bird Treaty Act, concluded August 16, 1916, which placed all our migratory birds under govermental supervision. But more important still was the treaty between Great Britain and the United States, concluded June 6, 1918, whereby the United States and Canada bind themselves to protect all migratory birds which pass from one country to the other, thus placing under the direct supervision of either country a great majority of the game and insectivorous birds of America. This is the first treaty of the kind ever entered into on this continent and it is hoped that the example thus furnished will be followed in time by every civilized country in the world.

The study of the several phenomena of migration, including the time of year, causes and methods of migration, and of the routes of travel pursued by the several species, has been an important object of the Survey for years and is still being carried on, notwithstanding the death of the lamented Prof. Cooke, whose earnestness of purpose, zeal, and grasp of the subject entitle his name to first place on the roll of the students of migration in this country.

Looking back on its 33 years of active work the Biological Survey may

point with pardonable pride to the organization of some important lines of research, to the consummation of some important projects, and to much good work in several lines of biologic research. Assured of its past, it may look forward with confidence to larger service and to a still greater measure of usefulness in the future.

In 1910, through the establishment of the Harriman fund, Dr. Merriam was enabled to relinquish all governmental work and to devote his undivided attention to scientific investigations of his own choosing, thus attaining a goal which many scientific men look forward to but rarely realize. In the Biological Survey, which he founded, and the affairs of which he so long and ably conducted, he has left a fitting monument. After his resignation I was appointed Chief of the Survey, June 1, 1910, which position I retained till December 1, 1916, when I resigned because of failing health, my successor being Mr. E. W. Nelson.

Washington, D. C., February 4, 1919.

THE EXISTENCE OF SEA BIRDS A RELATIVELY SAFE ONE

By JOSEPH GRINNELL

(Contribution from the Museum of Vertebrate Zoology of the University of California)

THE frequent reports of numbers of sea birds found along ocean beaches following storms are usually so worded as to lead the reader to infer that the life of oceanic birds is a markedly hazardous one. That quite the opposite is the case, under conditions undisturbed by the human factor, in comparison with most land birds is shown by a consideration of the breeding rates of the various species in question.

In no sea bird that frequents the North Pacific Ocean, insofar as I am aware, is more than one brood reared each year. Furthermore, with the majority of pelagic species, but one egg is hatched each year. Among these slow breeders are all of the albatrosses, all the petrels, the shearwaters, the fulmars, the auklets, the murres, most of the murrelets, and the puffins. With the Pigeon Guillemot and the kittiwakes, two eggs is the rule; while with most gulls, which, significantly, are much more littoral, three is the average number.

It is an accepted biological principle, I believe, that the rate of reproduction in any animal is somewhat in excess of sufficiency to meet the maximum probabilities of casualty in that species. Population may be supposed on an average to remain constant from year to year, even though we may observe fluctuations above or below the mean. Thus, in the case of the Fork-tailed Petrel, in which species but one egg is laid each year, the population of the species is raised not more than 50 per cent at the end of the breeding season—each two birds becomes three. But, by the beginning of the following nesting season, the population is (because of the average maintained norm) back to what it was a year previously. In other words, starting with 20 birds in April, there will be 30 (or less) by July; but by the April following, 10 of

these will have met their death, leaving again 20. Fifty per cent of the minimum annual population dies each year.

Compare this with the run of land birds. To cite the song sparrow, which we will figure as rearing two broods of four each, and starting with 20 birds in April, there will be 100 birds by July. Eighty of these will have succumbed to the various exigencies of terrestrial existence by the following April, when the normal complement of 20 will again obtain. Here there has been a death rate of 400 percent of the minimum annual population. In other words the life expectation in the petrel when it hatches is eight times that of the song sparrow when *it* hatches.

And what of the Brewer Blackbird and the Mudhen and the California Quail!

It is clear, then, that even with the faster breeding sea birds, such as the gulls with their three-egg sets, no such annual mortality is suffered as with the great majority of land birds. Why is it, then, that the deaths of sea birds become so impressive?

In the first place, as numerous naturalists have remarked before, the chances of a dead or dying land bird coming to the attention of the observer are relatively remote. Hosts of predatory animals of a variety of kinds are on the alert for any lagging bird. One that happens to drop onto open ground is quickly devoured, or carried away into concealment, or buried. But an oceanic water fowl which becomes decrepit or dies is rarely made way with. It floats on the surface of the water, for days and perhaps weeks, carried along by the currents and the winds. A storm setting on-shore is bound to sweep everything towards the beach from miles of surface; the narrow winrow of debris there left is the concentration from great areas of adjacent sea surface. The visitor to the seashore at such times naturally gets an idea of the mortality among the bird species represented which is exaggerated far above the real state of affairs.

I once experienced a five days' northwester while returning to California from Bering Sea in a small sailing vessel. Part of the time hove to, and part of the time running before the gale with double-reefed jib and fore-sail, abundant opportunity was given me to watch the behavior of the sea birds, some of which were always in sight during the daylight hours. I was impressed beyond all doubt, of the mastery of the albatrosses, petrels and fulmars over any ordinary stress of wind or wave.

The annual mortality of sea birds, beginning with the moment of hatching, probably pertains mostly to the early weeks of their lives before they have reached the full strength of their maturity, and to the period of advancing decrepitude in old age. Predacious enemies of sea birds, save of those that live close to shore within the domains of Duck Hawks, are rare. Accidents there must be, such as pertain to the processes of food capturing. But that wind or wave figure in any appreciable degree, per se, can hardly be considered for a moment. As above shown, life on the ocean wave, for those birds which are adapted to pelagic life, is by far the safest, as compared with the lives of the great majority of our terrestrial species.

In this connection I wish to file a complaint against the custom which prevails, of basing local records of birds upon the finding of dead, or living but helpless, examples cast up on ocean beaches. Such "remains" may have drifted scores, even hundreds of miles from where the birds met their death

or became incapacitated for normal existence. For instance the finding of the remains of Horned Puffins on the sea beach of San Mateo County, as has recently been reported, should not at all be construed as constituting valid proof of the normal occurrence of this species off the Californian coast. The floating bodies may have been carried on the southward-moving off-shore "Japan current" from off the coast of Oregon or even from Washington or Alaska. An element of chance clearly enters here which renders such "records" inconclusive. They certainly should not be considered as constituting the definite addition of a species to the existing native fauna of California, any more than with species imported by man.

It may be properly pointed out further that because of their slow breeding rate, in other words their lesser powers of recuperation when their numbers have been unusually reduced, any new danger is much more likely to lead to serious consequences with sea birds than with land birds. Such man-caused factors as disturbance of nesting grounds, and oil on the water, might quickly lead to extermination of the pelagic birds affected, because wholly new in the phylogenetic history of the species. Rate of reproduction is a very conservative character of species, not such as can be changed abruptly, as suddenly arising demands might make necessary to the continuance of the race.

California Museum of Vertebrate Zoology, Berkeley, March 15, 1920.

A RETURN TO THE DAKOTA LAKE REGION

By FLORENCE MERRIAM BAILEY

LAST DAYS IN NORTH DAKOTA

(*Concluded from page 72*)

THE last of August, having visited four lakes, I returned to the homelike farmhouse on North Sweetwater where I had explored sloughs and listened to the joyful songs of the Sora in June; and with the exception of the automobile trip to Island Lake, stayed there until the first Geese came from the north the last of September. During the five weeks of my absence, the nesting season had been completed except for birds that raise several broods, such as my small friend the House Wren down at Stony Point, who met me with her habitual vigorous scolding explained by a late brood of fuzzy-headed soft-gaped and short-tailed youngsters. As late as the first of September, the family were still met with, and talked volubly as I passed. Another mother with nearly grown young—a Holboell Grebe—was seen down by the lake shore the last of August, and I was much pleased to add her to my North Sweetwater list.

In June a few pairs of Bobolinks had been scattered over my beat, the black and white males singing from the fence posts and on the wing; but in August the twang of their call note, heard occasionally from a telephone wire, made me look for the yellowish breast of the sparrowy looking bird overhead. Along the margin of the lake, a Red-tailed Hawk, perhaps having exhausted

other pastures, was seen soaring with red fan outspread, or going along with its heavy steady flight so different from the light tilting beat of the Marsh Hawk, its squealing cry being given perhaps to start the small animals running out from cover. A Nighthawk, wandering after the nesting season, was flushed from a square of plowed ground, to which it soon returned as if realizing how well it was hidden there, reminding me of one seen on Devil's Lake which half decoyed as she rose from the two dull eggs that lay casually on the ground, her tail hanging straight and limp until she was clear of us.

Three Willets, perhaps part of the family met with previously on the road, spent some of their time for a week or more on our pasture slough. As they walked about over the hummocky, cattle-tracked ground on the edge of the water, their necks moved forward and back, and they fed rapidly, picking first from one side and then from the other, in their preoccupation often plumping down with one leg into a deep foot print, and when necessary wading up to their knees as freely as Crows walk on bare ground. In resting they would ordinarily stand humped up. Over their heads Barn Swallows sometimes flew about, also hunting from the slough. The Willets in going from one end of the long pasture slough to the other, perhaps hurried by my presence, would make short flights, showing their handsome black and white wing pattern and white rump. When I was absorbedly watching them one day, a small animal almost ran against my foot in the grass, and on looking down I caught sight of a golden brown weasel fleeing across the open.

Very few waders were seen during the migration, but one pretty flock of Snipe of various sizes was discovered in the corner of a neighbor's pasture, picking along the soft edge of a shallow rain pool, chattering and playing in delightfully animated style. Two large Yellow-legs waded about up to their bodies, and two of the smallest of the Sandpipers, probably the Least, with strong dark markings on the back, a line down the wing, and dark middle tail feathers, lifted their wings high at each other in pretty play, and then ran chattering about their business, while another small wader, presumably the Semipalmated Plover, with white forehead and dark collar, stood soberly looking on at the busy scene.

A week later, August 28, just before dark I heard the voices of shorebirds outside, and stepping out on the piazza discovered a large compact flock circling around again and again, low over the ground, talking volubly in argumentative tones, as if the next step were in dispute. Then suddenly as if a conclusion had been reached, with beautiful unanimity they rose, and showing points of light swung off toward the lake. Had they come at last to my door? I was greatly excited, having almost entirely missed their migration. But though I hurried down to the shore the next morning, they were not to be found, and had doubtless gone on their way to the south.

Flocks of Blackbirds were moving about here as at East Sweetwater, and a mixed flock of Yellow-heads and Red-wings, old and young, sitting on a fence, instead of all being headed one way, showed a confused line of heads and tails that would have seemed scandalously individualistic to the White Pelicans! A small flock of Brewer Blackbirds swung in near Stony Point at sunset on the first of September, flying down to the foot of the canes for a last drink, and then swinging back to the trees as if to roost, though many of the Blackbirds preferred the canes for the purpose. At Stony Point the night before the Blackbirds came, the rattle of a Kingfisher made me look up

in surprise to find one flying into a tree, as if stopping for the night on his way south. At this time Barn Swallows were also flying about the canes—now standing six feet high, topped with a soft autumnal pinkish brown brush—weaving in and around them as if prospecting for a roost, gathering about a Hawk that flew out over the edge of the lake, sweeping out over the surface of the water dipping down as if for insects; then sweeping back over the pasture with its soft gray aromatic sagebrush and yellow-buttoned tar weed, and its bright stretches of goldenrod illumined by the low western sun, their brown underparts glowing as they caught the light. Back and forth they went, down over the pasture, up across the sky, talking cheerily as they trooped by. A few other migrants, notably a Robin, a White-crowned Sparrow, and a flock each of Juncos and Yellow-rumped Warblers were seen up at the Grandfather's poplar grove, about the middle of September.

But it was not alone the birds which proclaimed that autumn was coming. The harvest was here. Traction engines and the long trains of their threshing outfits suggesting short railroad trains invaded the grain fields, to be cut at a rate of two hundred dollars a day, the automobile of "the boss" standing by ready for quick work in any emergency, be it to replace broken machinery or to exchange "fired" members of the threshing crew. Around the circle of the horizon, lines of smoke recorded the progress of the harvesting; while at night the fires of burning straw stacks seen north, south, east, and west gave new emphasis to the level horizon of the prairie. Nearer at hand, the smell of the burning straw pleased the nostrils, and the flaming and red-smoldering forms of the stacks delighted the eyes; though it was difficult for me to be reconciled to the enermous economic waste of their conflagration. At times the red light of a burning stack would be reflected in the lake, and sometimes one would give a supplementary touch of color to the red afterglow of sunset.

When the threshing outfit arrived at the Grandfather's farm, as no cook car was included, we all went up to help with the work, the son of three weeks riding in a clothes basket in the front of the wagon while dishes and supplies filled the back. When three strenuous days were over, our turn coming next, the grandparents likewise helped us through the ordeal; the crew, including several Austrians—one who could not speak English—a negro, and an I. W. W. worker, all being served unstintingly on the best the house and country afforded.

Then came the trip to Island Lake, on the return from which, in the second week of September, the appearance of the country had changed. Harvesting was over, the grain being stored partly in turret-like galvanized iron granaries in the fields, and most of the stacks having been burned. The sloughs that had dried out sufficiently had now been mowed for hay. Phalarope Slough, in which I had waded over the tops of my rubber boots, laboriously shoving through high slough grass, was now a flat, pale green, lake bottom, where horses grazed on the new tender growth; and here and there large hay stacks, put up by a stacker, their crowns held firm by rows of binder twine weighted down with stones, bore surprising testimony to the richness of the slough grass cover.

The small sloughs including those where the Shovellers had done head exercises and the Night Herons had watched for frogs, had now dried up, pink-flowered mint, mossy tussocks, and spear-pointed sagittaria leaves look-

ing decidedly stranded in the dry pasture with goldenrod, snowberry, tarweed, and sagebrush. The water had partly dried up in the large pasture slough, but Coot calls and Mallard quacks still came from it. Even the Big Slough where the Coots' nests had been found was partially mowed, although the water was still too deep for approach a long distance out from the black streak.

Harvesting over, the fall plowing and disking were under way, and flocks of Franklin Gulls were keeping watch of the work ready to take advantage of the soft open ground. A flock of five or six hundred followed the farmer and his man when disking with eight horses, but as he said, "they didn't stay long," the shallow cutting disk not exposing worms as the plow did.

The open season being well under way, automobiles full of hunters crossed the pastures to the pass below us, and nervous flocks of Ducks shifted up the lake out of reach. Mallards were flushed from the Pasture Slough and I was told by my friend, the farmer's wife, that late in the fall they are seen out in the stubble fields feeding on the barley left from the threshing. Evenings, in the golden afterglow, Ducks passed over toward the lake, their flocks suggesting the sound of wind in frosted corn.

As the September days passed, I began to think of the Geese coming from the north. Several Snow Geese, doubtless wounded on their northward flight in the spring, had been seen during the summer by a neighbor who thought they were nesting; and one day as I came in, the farmer asked if I had seen a large white bird in our next neighbor's pasture. "I bet it's a Pelican!" he exclaimed. Going out with me, he had to fairly point out the bird, for it was so conspicuous that I had passed it over as a white stone in the grass—which gives a side light on protective coloration! Creeping cautiously down to field-glass distance, I discovered to my delight that it was a pure white Goose with black wing tips and a brightly colored bill, bending over, feeding from the slough. But before I could get closer, feeling itself observed, the shy bird flew away. How soon would its brothers come from the north, and the reunited bands pass on to the south?

The year previous the Geese had come the first week in October, the farmer's wife told me, and she gave me a graphic account of their arrival. She had gone out to the windmill about five o'clock in the afternoon—the fifth of October—and looking north discovered them coming toward the lake. They made a solid phalanx a mile and a half wide, and coming on flew low over the windmill and the barn, passing on to the lake. With keen enjoyment of the memory of the wonderful sight she exclaimed—"I could see them coming from the east as far as I could see, and could see them going into the west till they were as small as Swallows!" They went out onto the lake for the night and with the sun on the water could not be seen.

During their stay in the neighborhood, they would "go out to feed about sun up and return from ten to twelve; then go out again from two to four, and return about sundown. One day about noon," my friend continued, "a very quiet day, bright and sunshiny, they drifted toward the shore of the lake in a big white mass and after they had gotten on the shore worked over the bank of the lake down into a slough, where they stayed and fed on the rank green grass." Their mass, she said, must have been four or five rods wide and a quarter of a mile long. "Oh that was a pretty sight, though," she ejaculated. The Geese stayed quietly feeding till about two o'clock when

some hunters came and drove them off, when they flew out east to feed. They would go miles to feed, she said, adding that "they like burnt barley fields the best, for in them the grain is in plain sight."

The Canada Geese come earlier than the Snow Geese and this year on the twenty-first of September, at Crary, twenty miles from us, three flocks were seen, fifteen in a flock. Three days later, as we were out by the windmill we heard a faint honking and I was delighted to discover two small flocks flying over toward the lake, seven in the first flock, eleven flying in single file in the second.

By this time we were having the clear bracing days of a northern autumn. In the Big Slough the grass around the black streak when lit by the sun made a vivid yellow streak, and along the lake border the trees were also yellowing. The stacks of slough hay were being fenced to keep the cattle from them during the winter, and fields of grain too poor for threshing were being burned. The burning was generally done by lighting kerosene-soaked rags tied on a long wire, the farmer dragging it along the edge of the field to be cleared, taking care not to get burned when the wind caught the flames. While all this was going on, eight horse gang plows were turning great squares of stubble field to black squares of rich Dakota soil.

When the Meadowlarks were heard singing with fervor the fifteenth of September, I attributed the surprising phenomenon to the fact that it was a warm day after protracted cold; but on the twenty-third, when with white frost on the ground and fences—cat tracks showing the frost on the gate post—both Meadowlark and Song Sparrow sang joyously, I put them down for good hardy North Dakota birds. On such stirring days who would not want to shout and sing, to rejoice in being abroad in the great out of doors? Glorious windy days there were when the afternoon sun sent long flashlight streaks across the pale stubble fields and straw stacks, as the wind whistled and cloud piles shifted across the blue sky.

But the autumnal nights were the most resplendent of all. As early as the last of August the heavens were growing prophetic with northern lights. On several brilliant starry nights I had noticed a wide band of light across the northern sky, from which light streaked up toward the zenith. Then came the night of the transcendent auroral display widely observed in the north. At its height, the north side of the heavens from horizon to domed zenith was one vast illumination with upward streaking and pulsations like the subdued flashing of electric light. The days following these electrical displays, the cool air seemed singularly pure and clear, exquisite small clouds standing still low in the blue heavens, so perfect they looked as if a child could pluck them from the sky.

Rich sunsets were followed by glorious starry nights when, with heavy wraps we would go out under the sky to study the constellations, the low horizon giving a full calendar, from the Dipper low in the northwest to Scorpio low in the southwest; while Capella shone brilliant just above the northeastern horizon, Cygnus and Lyra overhead, the Square of Pegasus, Cepheus, Cassiopeia, and Andromeda in the northeast; Perseus, Triangula, and Aries near the northeastern horizon. In the silence of the night, how one marvels at the star-filled firmament! When the hours of night had turned to those of morning, Orion slumbered on the horizon. Then came the morn-

ing stars, looming large and resplendent, Venus with great shining face standing high over the prairie. And then, they in turn were followed by the rich red band that presaged the coming of the morning.

Days beginning with sunrises of orange and red, ended perhaps with a lake of gleaming silver, the sunset a serene green with only delicate touches of red, perhaps with an orange sky behind the straggling tree border of the lake, or with a flamboyant afterglow sending continental funnels of color high in the sky.

Whatever turn they took the days were days of glory, and although I had to leave for another time that most wonderful ornithological experience, the northern flight of waterfowl, my summer had already had full measure and I left with mental gallery crowded with bird pictures, with pulses quickened by the stirring northern days, with mind swept clear by prairie winds, and with spirit uplifted by memories of gorgeous sunrises and sunsets, of brilliant morning stars, of marvelous star-filled firmaments, and illuminated auroral skies.

Washington, D. C., June 16, 1917.

FROM FIELD AND STUDY

The Eastern Savannah Sparrow and the Aleutian Savannah Sparrow at Tacoma, Washington.—The Savannah Sparrow group is represented at Tacoma during different times in the year by no less than four varieties, but it was not until the fall of 1919 that I was able to actually take specimens of the Aleutian Savannah Sparrow (*Passerculus sandwichensis sandwichensis*). The first, a male, and evidently a young of the year, was taken on October 12, while sitting on a fence in company with a large number of Savannah Sparrows. Its dark coloring, sluggish actions, and much larger size at once showed it to be different from its companions, with which the tidewater marsh was swarming. Upon returning to the same locality on October 30, I was successful in collecting another male of the same species, an adult this time, and saw what I am positive from their actions were two or three others. The difference in actions between this species and the rest of the group is so striking as to at once arouse my suspicion as to their being different. When I first saw this bird it flushed almost under my feet when I was stalking some ducks, instead of flying at from twenty to thirty yards as the other Savannahs all do. I at once lost all interest in the ducks and went in pursuit of my sparrow. After walking up and down where I had "marked" it, I saw it standing watching me some ten feet away, and it ran instead of flying. In fact I very nearly did not get this bird in my efforts to study its habits before collecting it.

On September 20, 1919, I collected on the same tide-flats an adult male Eastern Savannah Sparrow (*Passerculus sandwichensis savanna*), which was in the company of a large number of others that were apparently of the same kind. All three of the above mentioned specimens were kindly identified for me by Mr. Joseph Grinnell. Judging from specimens taken in past years I believe this form is an extremely abundant fall migrant, although I have never seen it in the spring migration.

It may be of interest to state that our breeding form in western Washington is the Brooks Savannah Sparrow (*Passerculus sandwichensis brooksi*), a very small, light-colored bird, barely five and a quarter inches long. They arrive from the south usually in the latter part of March, although a few are sometimes found much earlier, and they leave for the south again very early in September. The most northern record that I have for this form is a nest with six eggs in my collection taken, with the parent bird, on a

tidewater marsh at Knik, Alaska, by Mr. Geo. G. Cantwell, of Puyallup, Washington. At that point, Mr. Cantwell tells me, the Western Savannah Sparrows were still migrating, either to interior Alaska or to some point north of Knik, as none remained to breed in that section.

The Western Savannah Sparrow (*P. s. alaudinus*) reaches Tacoma about April 20 on its northern migration, remaining until about May 10, at which time our little Washington bird (*brooksi*) is busy with nests and eggs. I am uncertain as to what route *alaudinus* takes on the fall migration. Still another form of this sparrow is found during the breeding season in eastern Washington, namely the Nevada Savannah Sparrow (*P. s. nevadensis*), giving the state of Washington five very easily distinguishable forms. Recurring once more to *alaudinus*, it would seem that this form should be given a new English name, at least, as the present one is not only misleading, but also not in accordance with existing conditions.—J. H. Bowles, *Tacoma, Washington, January 3, 1920.*

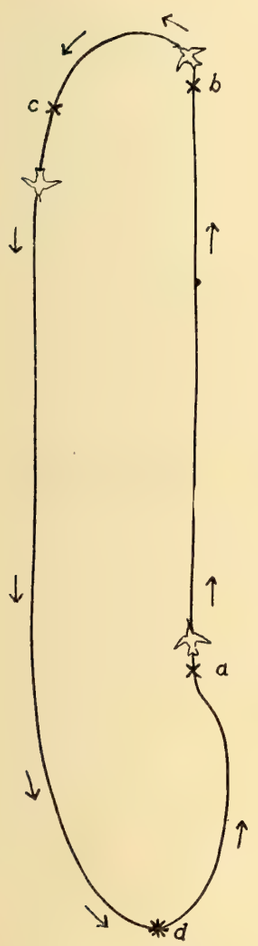

Fig. 27. Diagram illustrating the nuptial flight of the Anna Hummingbird.

Nuptial Flight of the Anna Hummingbird.—On January 13, 1918, I was fortunate enough to be present at a finished performance of the nuptial flight of a male Anna Hummingbird (*Calypte anna*), and to observe the affair so clearly that I could diagram it with accuracy. I have been present at the performance many times since, but never under conditions permitting a full and clear observation. I do not know, therefore, whether, typically, the Anna Hummer adheres rigidly to the evolutions here described, or whether he varies them somewhat.

The phenomenon was observed over chaparral in a small ravine several hundred yards uphill from the University of California swimming pool, Berkeley. It consisted of set aerial evolutions with vocal demonstrations occurring at mechanically exact points in space and time. The phases of the affair were as follows (see fig. 27):

The bird hovered in one spot, *a*, long enough to utter its common song, *zeed'l-zeed'l-zeed'l, zeed'l-zeed'l-zeed'l, zeed'l-zeed'l-zeed'l.* I can best convey an idea of the timbre of this utterance by asking the reader to think of the loose-rattling plus glassy-singing sound-quality of small shot made to roll round the inside of a thin bottle or flask. But there is also a dry element involved, as if fragments of crisp thorny-edged leaves were mixed with the shot, scratching the glass on their way round and lending a sort of continuous high squeaky ring to the effect, like a thread of tonality running throughout. The utterance is rather faint and whisper-like, and does not come out into full tonality. It is not rapid. It consists of nine syllables in three sections of three each.

From *a* to *b* the bird climbed with great rapidity straight into the air, hovering a moment at *b*, without, however, vocalizing.

The line from *c* downward represents a bullet-swift dive, head-first, with an upward swoop just clear of the bush-top at a specifically aimed-at point, *d*. Within a few inches of *d* the female was doubtless perched, though she was so well concealed that I could not see her from where I stood.

At *d* the bird uttered an abrupt, explosive, ringing *kilp* or *pilp*. Mr. J. Grinnell spells it *plop*, which is the same in essence. The vowel-sound varies with the intensity of the utterance, sometimes being lower and nearer "o". There is certainly a musical "l" involved, which my ears persist in hearing after the vowel-sound. As a matter of fact, all of the sound elements concerned are nearly, if not quite, simultaneous. The note is remarkable: tonal and clear, and louder and more violent than one would expect from a bird of the hummer size. It is a sort of clank. It rings out like a good live blow on musical glass or metal, but the ring dies instantly as if gulped down into some cavern of dead silence.

This *kilp* is uttered en route from *c* to *a*. Hardly has the sound emanated from *d* when the bird may be descried at *a*, hovering as before and uttering the nine-syllabled note already described. Incidentally it may be mentioned that this *kilp*-note may prove very mystifying when heard for the first time, since it is always uttered in rapid transit from one place in air to another, but, because it always comes from the same spot in the bushes, one is led to assume that the author thereof must be stationary.

The Anna Hummer went through the performance described, eleven times. Not once did the thing vary in any degree or detail that I could detect. The distance from *b* to *d* I estimated at 75 feet.

It may not be amiss to comment briefly on some utterances of this hummingbird not necessarily connected with the nuptial flight. The nine-syllabled song is also used for ordinary purposes, without other demonstrations, and may be heard when the bird is on the wing, or perching. It is subject to irregularities in form, and is not always nine-syllabled. Another note is a rapid shaking utterance—*chicker-chicker-chicker-chicker-chicker-chicker*—not unlike the trill of the Chipping Sparrow in its more strident and untonal phase. This shaking note sometimes follows the *kilp*-note. Under ordinary conditions, i. e., not during the nuptial flight, the nine-syllabled note is sometimes followed by a brisk *thip! thip! thip!* (th pronounced as in "other"). It is a tiny note, yet violent and forced-sounding. The bird also has a sharp smacking *tip*-note, like that of the Junco and Fox Sparrow. It is sometimes uttered on the wing, in a series: *tip, tip, tip-tip-tip*, etc.—Richard Hunt, *Museum of Vertebrate Zoology, Berkeley, California, February 26, 1920.*

The Northern Bald Eagle a Probable Californian Bird.—The northern form of the Bald Eagle (*Haliaeetus leucocephalus alascanus*), as far as I am aware, has not been recorded from California, though it should occur at least as a migrant. The resident form in the Upper Sonoran regions of the state is no doubt the Southern Bald Eagle (*H. l. leucocephalus*), but a specimen in my collection (no. 24854, male adult, Lakeport, Lake County; February 2, 1893; Walter Brett, collector), with a wing measurement of 595 mm., is large enough to be *alascanus*. Though the material available is not sufficient to decide the point, I have been able to examine two adult females of the southern form, in the Dwight collection, one from Fauquier County, Virginia, and one from Safety Harbor, Hillsborough County, Florida, having wing measurements respectively of 586 and 565 mm. The Lakeport male is thus a little larger than either of these southern females, and not much smaller than an adult of undetermined sex (though presumably a male), in my collection from Douglas Island, Alaska, with a wing measurement of 623 mm. The two forms of the Bald Eagle have never been well differentiated. The sexes vary a good deal in size among themselves, and the geographical ranges of the two forms are not well understood; but an examination of the material available from California will probably show the occurrence of both forms in the state.—J. H. Fleming, *Toronto, Ontario, December 15, 1919.*

A New Bird for the Pacific Slope of Southern California.—The Bohemian Waxwing (*Bombycilla garrula*) is a rare bird in California, and there are but two published records for the southern part of the state, I believe. One bird was taken near Victorville (Condor, vii, p. 77), and another near Daggett (Condor, xiii, p. 34). There appear to be no recorded instances for the Pacific slope of southern California.

This present winter (1919-20) I have observed numbers of these birds in Claremont during January and February, and specimens of both sexes were collected on February 15, 16, 17 and 18. The birds collected were with flocks of Cedar Birds (*Bombycilla cedrorum*), and seemed to be feeding exclusively on pepper berries, with which their throats were gorged; one, by actual count, had thirty-nine berries in its throat. To show how abundant these birds were here, on February 22 I carefully counted the Bohemian Waxwings in a rather large flock. There were over a hundred in a pepper tree, while at the same time there were many others sitting in a tall blue gum nearby, so that I am safe in saying that there were at least a hundred and fifty of the Bohemian Waxwings present at that time. In fact these birds outnumbered the Cedar Waxwings three to one.

I was within fifteen and twenty feet of the birds when counting them, and at this distance the chestnut-colored under tail coverts, gray breast and underparts, and large size, were all plainly apparent.

It will be interesting to learn whether there are other stations of record upon the Pacific slope this winter. Until the present time our winter has been dry. Bailey Mountain Chickadees, Slender-billed Nuthatches, Blue-fronted Jays, and Townsend Solitaires have been seen right here in town. A fellow collector and member of the Cooper Club, Gordon Nicholson of Ontario, who has observed the Bohemian Waxwings with me here, has taken special pains to examine the flocks of Cedar Birds in Upland and Ontario, without detecting a single Bohemian Waxwing among them up to this time.

This appears to be the southernmost point of record for the species in North America as well as the first recorded instance for the Pacific slope of southern California. It is noteworthy also in that there was such a large number of the birds present.—Wright M. Pierce, *Claremont, California, February 25, 1920.*

Western Evening Grosbeak in Southern California.—On the afternoon of November 2, 1919, during a very cold spell following a storm with much snow in the mountains nearby, I was walking through Smiley Heights Park in Redlands, when the tinkling notes of a chickadee drew my attention to a small cedar or cypress directly at the side of the road. To my astonishment it looked like an animated Christmas tree, for there were not only a half dozen Mountain Chickadees (*Penthestes gambeli baileyae*) clinging to the twigs and fluttering in the branches, but as many Red-breasted Nuthatches (*Sitta canadensis*) running on the trunk of it and the neighboring tree, while ornamenting the outer branchlets were at least a dozen Western Evening Grosbeaks (*Hesperiphona vespertina montana*), male and female.

I had never before seen them in southern California and could not believe my eyes at first, but the size and beak were right, and the coloring, particularly that of the males, was unmistakable, for I had become very familiar with them in Oregon. They were industriously peeling away the hard outer shell of the cedar nuts and feasting upon the seeds within. The afternoons of the two following days, November 3 and 4, I went again at the same hour and found both times a pair of the grosbeaks, a male and a female, in the same tree, eating the seeds as before. They seemed entirely unafraid and let me stand for an hour both days directly beneath them not ten feet away. The second day they finally flew away toward the west, but on the third day they were still eating seeds when I left. I was prevented from going again before a week passed and then could find no trace of them and have never seen them since, even though colder weather followed at Thanksgiving.—Lilian Zech, *Redlands, California, February 29, 1920.*

Western Evening Grosbeak in the San Francisco Bay Region.—It is apparently a great asset to have a tall maple tree hanging full of winged seeds in an Oakland garden, for on February 27, 1920, at eight o'clock in the morning, I saw four Western Evening Grosbeaks (*Hesperiphona vespertina montana*) in that tree, and they ate the seeds steadily until nearly twelve o'clock. Two of them were much yellower than the others, and one was quite a little smaller. Next morning at the same time they came again, and I telephoned two members of the Cooper Club to come and enjoy them with me, but they stayed only an hour and a half.—Jane L. Schlesinger, *Oakland, California, March 3, 1920.*

Probable Breeding of the Aleutian Tern in Southeastern Alaska.—In southeastern Alaska on the Situk River Flats, near Yakutat, from July 18 to 23, 1916, and during the first week of July, 1917, and at the Alsek River Flats (Dry Bay) sixty miles easterly, on July 6 and 7, 1917, among the common Arctic Terns that were obviously breeding, were many Aleutian Terns (*Sterna aleutica*), comprising perhaps thirty per cent of the tern population. They showed as much concern over the presence of an intruder as did the Arctic Terns, and there is every reason to believe them to have been breeding in company with the more common *paradisaea*, although neither eggs nor young of either were found during brief searches at these late dates. During one of the short searches on the Situk Flats in 1916, one Aleutian Tern repeatedly struck the writer's hat, all the

while uttering its complaining note. Thus, with reasonable certainty of success, the Aleutian Tern may be looked for as nesting as far east as Dry Bay, which, so far as the writer knows, is far to the eastward of any previous record of its breeding.—ERNEST P. WALKER, *Phoenix, Arizona, February 7, 1920.*

Dusky Warbler at Berkeley, California.—On February 23, 1920, Dr. William F. Bade handed me a recently dead Dusky Warbler (*Vermivora celata sordida*) which he had just picked up in his backyard at 2616 College Avenue, Berkeley. The feathers in a spot on the throat and on the forehead were gone, as if slugs had been at work on the bird, so that it must have met its death the preceding night or before. Upon skinning, I found wounds in the body which suggested that it had encountered the claws of a cat. The bird was a female in good feather. It was somewhat discolored by town soot, so that it had probably been living in the well-known smoke belt of Berkeley and Oakland for some time, perhaps wintering here. The specimen is preserved in the Museum of Vertebrate Zoology as no. 40396 of its bird collection, and authenticates the occurrence of the Dusky Warbler a little farther north than heretofore reported. The two other stations for the San Francisco Bay region are Hayward and Palo Alto—occurrences in December, January and February (see Pac. Coast Avif., no. 11, 1915, p. 146). The northernmost breeding point for this warbler so far as known is Santa Rosa Island, below Point Concepcion. Part of the *winter* habitat of the bird thus lies some 260 miles to the *north*ward of its *summer* range, as well as over 100 miles to the westward.—J. GRINNELL, *California Museum of Vertebrate Zoology, Berkeley, March 22, 1920.*

Range of the Magpie in New Mexico.—On December 28, 1919, I saw a Magpie (*Pica pica hudsonia*) in a willow swamp on the banks of the Rio Grande near Bernardo, New Mexico. I have also seen the species this winter near Tome, and for several winters near Peralta. On October 13, 1918, I saw a large number west of Alameda. They are plentiful in summer near Valley Ranch, New Mexico, and in Rio Arriba County are found throughout the year.

Bernardo, as nearly as I know, is the southernmost point of record. I have never seen one in the Rio Grande Valley proper in summer; apparently they do not breed south of Valley Ranch, on the upper Pecos.—ALDO LEOPOLD, *Albuquerque, New Mexico, February 21, 1920.*

EDITORIAL NOTES AND NEWS

Frank S. Daggett died in Redlands, California, April 5, 1920. In his death the Cooper Club has lost one who was a member almost from the inception of the organization and who in many ways was an important factor in the development of the Club. The Southern Division in particular will miss the presence of a member always faithful in attendance at the meetings, and ready, with helpful counsel and personal effort, in the various problems that the Club has faced. An account of Mr. Daggett's life will appear in the next issue of THE CONDOR.

The Supreme Court of the United States has recently handed down a decision upholding the constitutionality of the Migratory Bird Treaty Act. This opinion was delivered in judgment of a bill in equity brought by the State of Missouri to prevent a game warden of the United States from attempting to enforce the Act and the regulations made by the Secretary of Agriculture. Ornithologists will cordially endorse the "common sense" summary in the last paragraph of the Court's decree, that: "Here a national interest of very nearly the first magnitude is involved. It can be protected only by national action in concert with that of another power. The subject matter is only transitorily within the State and has no permanent habitat therein. But for the treaty and the statute there soon might be no birds for any powers to deal with. We see nothing in the Constitution that compels the Government to sit by while a food supply is cut off and the protectors of our forests and our crops are destroyed."

The National Parks Service is this year inaugurating a system of instruction in natural history for visitors to Yosemite National Park. Two members of the Cooper Club will conduct this work during the season of 1920. Through coöperation with the California Fish and Game Commission, Dr. H. C. Bryant will give instruction from June 1 to August 31. Dr. L. H. Miller, Department

of Biology, Southern Branch, University of California, will be in Yosemite during part of the summer, and toward the end of the season he will conduct similar work at Fallen Leaf Lake, in the Tahoe region. The programs include lectures on the plant and animal life of the mountains, to be illustrated in part by lantern slides and moving pictures. Field trips will be arranged for parties of different ages.

During the coming Summer Session at the University of California, June 21 to July 31, 1920, a course on the birds of California will be offered by Mr. Tracy I. Storer of the Museum of Vertebrate Zoology. The subject will be dealt with in a manner adapted to the needs of persons having no previous knowledge of the subject.

The probable fate of all private collections which are not destroyed by some such accident as fire is illustrated in the case of the Grinnell collection of bird skins. This entire collection has been presented to the California Museum of Vertebrate Zoology, which means that it is now the property of the University of California and hence of the State of California. The specimens number 8,312 and were collected by Mr. J. Grinnell during the period from 1893 to 1907 inclusive. The collection contains twenty-seven types of subspecies; also specimens of at least three species of birds which are now extinct, and many "record specimens". There are large series of such birds as the Willow Ptarmigan, specially selected to illustrate processes of molt, and long suites of birds gathered from appropriate territory to show facts in geographic variation. This collection adds importantly to the research material owned by the Museum of Vertebrate Zoology. The total ornithological collections there now amount to 40,438 specimens.

Mr. William L. Finley has been commissioned by the National Geographic Society to secure motion pictures of the rarer birds and mammals of North America. Mr. and Mrs. Finley will spend May and June of the present year in Arizona and on the Gulf coast of Texas, in the pursuit of this work.

Mr. Austin Paul Smith is collecting birds and birds' eggs this year on the west coast of Guatemala, with headquarters at San Jose.

The annual roster appearing in this issue shows an active membership in the Cooper Club of 649, with honorary 6, making a total of 655 members, the largest number in our history. As usual, Mr. J. Eugene Law served in compiling the roster, and changes or corrections should be reported to him so as to apply from now on to next year's list.

Bird Banding Work being taken over by the Biological Survey.—The Bureau of Biological Survey at Washington, D. C., has taken over the work formerly carried on under the auspices of the Linnæan Society of New York by the American Bird Banding Association. In taking over this work the Bureau feels that it should express the debt that students of ornithology in this country owe to Mr. Howard H. Cleaves for the devotion and success with which he has conducted this investigation up to a point where it has outgrown the possibilities of his personal supervision.

Under plans now being formulated this work will give a great amount of invaluable information concerning the migration and distribution of North American birds which will be of direct service in the administration of the Migratory Bird Treaty Act, as well as of much general scientific interest.

It is desired to develop this work along two principal lines: first, the trapping and banding of waterfowl, especially ducks and geese, on both their breeding and winter grounds; and secondly, the systematic trapping of land birds as initiated by Mr. S. Prentiss Baldwin, the early results of which have been published by him in the Proceedings of the Linnæan Society of New York, no. 31, 1919, pp. 23-55. It is planned to enlist the interest and services of volunteer workers, who will undertake to operate and maintain trapping stations throughout the year, banding new birds and recording the data from those previously banded. The results from a series of stations thus operated will undoubtedly give new insight into migration routes, speed of travel during migration, longevity of species, affinity for the same nesting-site year after year, and, in addition, furnish a wealth of information relative to the behavior of the individual, heretofore impossible because of the difficulty of keeping one particular bird under observation.

The details of operation are now receiving close attention, and as soon as possible the issue of bands will be announced, with full information regarding the methods to be followed and the results expected. In the meantime, the Biological Survey will be glad to receive communications from those sufficiently interested and satisfactorily located to engage in this work during their leisure time, for it is obvious that a considerable part must be done by volunteer operators. It is hoped that a sufficient

number will take this up to insure the complete success of the project.—E. W. Nelson, Chief of Bureau, *Washington, D. C., April 26, 1920.*

PUBLICATIONS REVIEWED

Bird Banding by Means of Systematic Trapping. By S. Prentiss Baldwin. Abstract of Proceedings, Linnaean Society of New York, no. 31, 1919, pp. 23-56, pls. i-vii. Separate received March 17, 1920.

Both bird-banding and bird-trapping have been used independently for one purpose or another for many years, yet it has remained for Mr. S. Prentiss Baldwin of Cleveland, Ohio, to combine these two procedures into a "new" method which has great potentialities for certain lines of ornithological study. Quite incidentally, in an effort to rid his farm of English Sparrows, Mr. Baldwin saw the possibilities of this method, and the paper cited above gives a summary of his results for the period from 1914 to 1918. Part of the work was done in the summer time at Cleveland, Ohio, and the balance at Thomasville, Georgia, during the late winter and early spring months.

The author's method was to set and bait one or more of the "government" double-funnelled sparrow traps, surrounding each by a 20-foot circle of 3-foot wire netting as a cat guard. Traps were visited at frequent intervals, the captured birds being removed, tagged and recorded and then released. In addition, during the summer, a number of House Wrens were caught in box nests provided with a trap door.

The species caught by the sparrow traps include Song, Chipping, White-throated and White-crowned Sparrows, White-eyed Towhee, Myrtle Warbler, Red-bellied Woodpecker, Brown Thrasher, Eastern Bluejay and Mourning Dove, although traps set for the larger of these birds would not always retain the smaller species. Shrikes gave some trouble in Thomasville and had to be hunted down, but cats were effectively guarded against by the circle of netting. A few birds injured themselves through their struggles in the trap, but subsequent recapture of some of these individuals showed that such wounds healed in a few days.

Permanent residents, summer visitants, winter visitants and transients all figure in the results. Trapping at Thomasville in the spring of 1917, and using five traps for six weeks, some 684 birds were captured. Of these 414 were "repeats" that had been trapped, branded and released previously. Of 239 new birds, 215 were classed as migrants or winter visitants and only 24 as residents. Four of a lot totalling 63 belonging to the visitant-migrant category banded in 1915 were retrapped in this season and 17 of 169 banded in 1916 were taken again in 1917. Of residents, two of 27 banded in 1915 were recovered and 8 of 44 trapped in 1916.

Mr. Baldwin obtained definite evidence on a number of the heretofore unsolved problems in ornithology. The return of winter visitants was shown strikingly in the case of White-throated Sparrows. Twelve of a flock of twenty were banded in 1915. Two of these were recovered in 1916 and five new birds banded. In 1917 one 1915 bird and four 1916 birds were recovered. The birds in this flock in three successive years, stayed close about a certain thicket at which his trap "A" was placed. They rarely ventured as far as trap "B", 100 yards distant, and none was ever taken in the latter trap.

Chipping Sparrows which do not winter at Thomasville have been taken in the spring of successive years, showing that migrants stop off at the same stations when en route between their winter and summer ranges. Trapping in 1917 resulted in the recapture of three of these sparrows banded in 1915 and eight of those marked in 1916. Song Sparrows trapped at Cleveland indicated that migrants do not move forward at a uniform rate, but, in fall at least, make a move, then linger until a storm urges them on when their places may be taken by new arrivals from the north.

Perhaps the most interesting observations of all are those made on House Wrens at Cleveland. On June 19, 1915, a pair and the members of its brood were banded in a certain "trap" nest. On August 14 the same year one member of this pair was found with a new mate and second brood in the same box while the other member of the original pair also had a new mate (unfortunately not banded) and was also rearing a second brood in another box about 100 feet from the first. In 1916 the second of these "divorced" Wrens was found at the same (second) box but the identity of its spouse as regards the second 1915 mating could not be ascertained.

Contrary to general opinion the handling of birds incidental to their being removed from the traps and being tagged does not discourage their return as is proven by the number of recaptures. Some birds acquire

the "trap habit" and a few individuals made themselves obnoxious by returning to the traps again and again. Considerable individuality in temperament was displayed by the trapped birds. One White-throated Sparrow always fought and bit when handled and another invariably squealed upon being removed from the trap, while a certain Brown Thrasher used to stand quietly until released.

After reading Mr. Baldwin's paper the reviewer is greatly impressed with the possibilities in this new method. Persons who are possessed of even a modicum of spare time can add materially to the fund of ornithological information by operating one or more of these traps through a greater or lesser part of the year. Here is a case where for purposes of identification and record a "bird in the hand", even though temporarily, is worth vastly more than "two in the bush". The establishment of a series of stations along some well travelled route might make possible not only the accurate tracing of *species* migration but even the migratory movements of *individuals*.—Tracy I. Storer.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

November.—The November meeting of the Northern Division of the Cooper Ornithological Club was held on the 20th, at 8 P. M., at the Museum of Vertebrate Zoology. In the absence of both president and vice-president, Mr. Curtis Wright was asked to preside. Members present were: Mesdames Allen, Griffin, Grinnell, Head, Kibbe, Schlesinger, Thompson, Van Dyke; Messrs. Bade, Bryant, Carriger, Cooper, Grinnell, Hunt, Kibbe, Loomis, Mailliard, McLean, Moffitt, Palmer and White. Visitors were: Mr. Austin, Miss Cooper, Dr. Hanna, Miss Evermann, and Mrs. Thompson.

The minutes of the October meeting were read and approved. Those whose names were proposed at the October meeting were elected to membership, namely, Miss Ames, Mrs. Dodge, Mr. Fletcher, Mr. Harper, Mr. Harrison, Miss Mackey, Mrs. Mead, Mr. Moore, and Mrs. Price. In addition to the proposals before the Southern Division, which included Miss Ruth Ledig, Mr. Richard F. Williams, Mr. Charles F. Hodges and Mrs. Brownlee, the name of Miss Bessie M. Lander, Exeter, Calif., was proposed by Dr. Grinnell, and that of Mr. Lloyd Austin, Berkeley, by Miss Anna Head.

A letter from Mr. Finley, together with an article of his, clipped from the *Oregonian* for October 26, urged immediate action regarding the drainage of Lower Klamath Lake. On motion of Dr. Bryant, seconded by Mr. Storer, it was declared to be the sense of the meeting that it would be against the interests of the citizens of Oregon and California to have the Klamath Lake Reservation destroyed as a bird refuge, and that letters asking for an investigation should be forwarded to the Secretary of Agriculture and to the Secretary of the Interior.

Dr. Grinnell announced that letters from Mr. Swarth, who attended the meeting of the A. O. U., reported an attendance of twenty-four out of forty-nine fellows, and also the election of two new fellows: Mr. Alexander Wetmore and Mr. J. H. Riley. Dr. G. Dallas Hanna then presented the results of "Bird Studies on the Pribilof Islands", in which he dwelt particularly on the large number of species (129) that have been collected although only twenty-two are listed as breeding there. He emphasized also the enormous numbers of sea birds, such as the Least Auklet and the Pallas Murre, which breed on the Pribilof Islands each year. After some discussion it was voted to adjourn.—Amelia S. Allen, *Secretary.*

December.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, December 18, at eight o'clock in the evening. Dr. Evermann was in the chair and the following members and friends were present: Mesdames Allen, Ames, Ferguson, Griffin, Grinnell, Head, Kelly, Law, Mackey, Mead, Price, Schlesinger, and Thompson; Messrs. Austin, Bell, Carriger, Cohen, Dixon, Evermann, Grinnell, Howell, Kellogg, Kibbe, La Jeunesse, Lamb, Lastreto, Law, Little, Mailliard, Wheeler, White, and Wright. Visitors: Mesdames Evermann, Hardy, Lamb, Thompson, and Wood.

November minutes were read and approved and Southern Division minutes for October and November were also read. Miss Bessie M. Lander and Mr. Lloyd Austin whose names were proposed in November, were elected to membership. Miss Ruth Ledig, Mr. Richard F. Williams, Mr. Charles F. Hodges, and Mrs. W. L. Brownlee, elected by the Southern Division were approved. New names proposed were: Miss Ethel

Ayer, Oakland, by Mr. A. S. Kibbe; Miss Catharine Mills Flinn, Berkeley, by Mr. H. C. Bryant; Miss Helen Flynn, Berkeley, by Mr. H. C. Bryant; and Mr. S. G. Baldwin, Palo Alto, by Prof. J. O. Snyder.

Mr. A. S. Kibbe, as chairman of the committee for the conservation of wild life, gave a report of conditions at Lake Merced, on the property of the Spring Valley Water Company just outside San Francisco, where, on December 14, many hunters had been shooting and had left unretrieved numerous birds, not legitimate game. On motion of Mr. Lastreto, seconded by Miss Head, the secretary was instructed to address a letter to the Spring Valley Water Company, asking that wanton shooting be prohibited by the company.

Nominations for officers for the coming year were then called for by the President. Mr. Mailliard nominated Mr. Curtis Wright for president; Mr. Carriger nominated Mr. Roswell Wheeler for vice-president and Dr. Grinnell nominated the present incumbent for secretary. All nominations were then declared closed.

Mr. Mailliard then reported that a number of members were interested in a movement to establish a permanent endowment fund to be used for the production of publications of the Cooper Club. In the hope that such a fund might be established, Mr. Mailliard presented a motion that Messrs. Chambers, Law, and Howell be formally constituted a committee to solicit, collect, and invest funds in the name of the Cooper Ornithological Club, for the purpose of forming a permanent endowment, the income only of which was to be used for such publication purposes as the Club may deem proper; and that all life membership fees, heretofore as well as henceforth, paid in, be applied to this endowment. Mr. Carriger seconded the motion and it was passed unanimously. The evening's program consisted of a talk by Mr. Remington Kellogg on "The Birds of France".—Amelia S. Allen, *Secretary.*

January.—The Northern Division of the Cooper Ornithological Club held its annual meeting at the Museum of Vertebrate Zoology on January 15 at 8 p. m. In the absence of Dr. Evermann, Mr. Wright presided. The following members and friends were present: Mesdames Allen, Grinnell, Kelly, McClelland, Mead, Schlesinger, Swezy, and Thompson; Messrs. Austin, Bell, Bryant, Carriger, Cooper, Dixon, Grinnell, Hansen, Howell, Hunt, Kibbe, Lamb, Lastreto, Little, McLean, Mailliard, Storer, Swarth, Wheeler, White, and Wright. Visitors: Mrs. Evermann, Miss Evermann, Mrs. Howell, Mrs. Swarth, Mrs. Thompson, Mrs. Wheeler, and Mrs. Wood, and Mr. C. J. Wilson, from London.

The minutes of the December meeting were read and approved, after which new members were elected as follows: Miss Ethel Ayer, Miss Catherine Mills Flinn, Miss Helen Flynn, and Mr. S. G. Baldwin. Names forwarded by the Southern Division in October and November minutes were also favorably acted upon. The following names were proposed: Ivan Murray Johnston, Upland, Calif., by H. G. White; Mrs. Malcolm P. Anderson and Mrs. Katherine Neilson, both of Alameda, by Tracy I. Storer. Mr. Howell then made a strong appeal for contributions to the endowment fund. Mr. Kibbe reported a definite hope for favorable action looking toward control of wandering cats.

The annual election of officers resulted in the ratification of nominations made at the December meeting, namely: Mr. Curtis Wright, president; Mr. Roswell S. Wheeler, vice-president; and Amelia S. Allen, secretary. The regular procedure of the meeting was interrupted by arrangements for a flashlight photograph of those present, after which Mr. Swarth gave a most interesting account of his experiences at the November meeting of the A. O. U., and subsequent visits to famous museums and ornithologists at different centers in the East and Middle West.

A belated motion provided that Mr. Swarth should present at the February meeting a co-ordinate plan for taking the bird counts and gathering records of migrations as requested by the Biological Survey. —Amelia S. Allen, *Secretary.*

February.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, February 19 at 8 p. m. President Wright was in the chair and the following members were present: Mesdames Allen, Ayer, Bridges, Ferguson, Flynn, Griffin, Grinnell, Gunn, Kibbe, Law, McClelland, Schlesinger, and Thompson; Messrs. Austin, Bryant, Carriger, Dixon, Evermann, Grinnell, Howell, Hunt, Kibbe, McLean, Storer, Swarth, White, and Wright. Visitors: Mrs. Swarth, Mrs. Taylor, Mrs. Thompson, Mrs. White, and six students.

The minutes of the January meeting were

read and approved and December and January minutes from the Southern Division were read. Ivan Murray Johnston, Mrs. Malcolm P. Anderson, and Mrs. Katherine Neilson were elected to membership, and the following names were proposed: Miss Genevieve S. Burk, Berkeley, by Dr. H. C. Bryant; and Miss Lora Gertrude Rush, Berkeley, by Mrs. J. T. Allen. Elections by the Southern Division at the January meeting were also read and approved.

A letter from the Pacific Division of the American Association for the Advancement of Science announcing meetings to be held in Seattle in June, were read. Dr. Evermann also reported for the committee and made a motion that the Cooper Club consider the question of holding a meeting in Seattle as one of the affiliated societies. On passage of this motion, a second one was presented that the Club arrange such a meeting. An amendment by Mr. Storer provided that the question be referred to northern members residing in Washington and Oregon. The Secretary was instructed to write the necessary letters. In the absence of Mr. Law, Dr. Grinnell presented the business manager's report for 1919 which was adopted with hearty thanks to Messrs. Chambers and Law.

Announcement was made by the President of the re-appointment for 1920, of Dr. J. Grinnell, as editor of "The Condor"; Mr. H. S. Swarth, associate editor; Messrs. W. Lee Chambers and Eugene Law, business managers. Mr. Swarth reported for the committee on census lists for the Biological Survey that fifty letters had been sent to observers throughout the state and thirteen replies had been received.

After a short period devoted to seasonal observations, the lights were turned out and Mr. Dixon showed his wonderful pictures of three of the Alaskan birds studied on the Stikine River by himself and Mr. Swarth in the summer of 1919.—Amelia S. Allen, *Secretary.*

SOUTHERN DIVISION

January.—The regular monthly meeting of the Cooper Ornithological Club, Southern Division, was held at the Museum of History, Science and Art, at 8 p. m., January 29. President Miller held the chair, with other members present as follows: Messrs. Appleton, Brown, Daggett, Dickey, Hanaford, Hoffmann, Henderson, Lamb, Nokes, S. Peyton, Reis, Rich, Robertson, Ross and Wyman. Mr. Baisley and Mr. Kersey were visitors.

Minutes of the December meeting were read and approved. On motion by Mr. Reis, seconded by Mr. Robertson, applicants whose names were presented at the previous meeting were elected to membership. New applications were presented as follows: Charles A. Warmer, Los Angeles; Miss Mary Mann Miller, Los Angeles; and W. Denton Baisley, Glendale, by W. Lee Chambers; Mrs. Millard L. Green, Long Beach, by Fred Barker; Miss Elsie M. Saville, Topeka, Kas., by Horace Gunthrop; E. R. Andrews, Oakland, by H. C. Bryant. Also the following from the Northern Division: Lloyd Austin, Berkeley; S. G. Baldwin, Palo Alto; Miss Ethel C. Ayer, Oakland; Miss Catharine Mills Flinn, Berkeley; Miss Helen Flynn, Berkeley.

Mr. Dickey, chairman of the nominating committee, being called upon to report, named Messrs. Miller, Rich and Wyman, as nominees for president, vice-president and secretary, respectively, for the ensuing year. Nominations were closed on motion by Mr. Lamb, and in proper form these parties were duly elected.

Formal business ended, Mr. Ralph Hoffman addressed the Club on "Massachusetts Bird Students of the Last Thirty Years". His intimate acquaintance with many of these ornithological notables, and a pleasing ability as a word painter of character and disposition, peculiarly fitted Mr. Hoffman for his treatment of the subject, and his address was greatly enjoyed and appreciated by the members. Followed a half-hour of discussion of matters ornithological, during which the general visitation of mountain dwelling birds to the low-lands was commented upon by various members. Adjourned.—L. E. Wyman, *Secretary.*

February.—The regular monthly meeting of the Cooper Ornithological Club, Southern Division, was held February 26 at 8 p. m., at the Museum of History, Science and Art, with President Miller in the chair and other members in attendance as follows: Messrs. Appleton, Daggett, Esterly, Hanaford, Little, Nicholson, Nokes, Meadows, Pierce, Reis, Rich, Robertson, Taylor, Wall, and Wyman; and Miss Palmer. Minutes of the January meeting were read and approved. Proposals for membership, presented at that meeting, were favorably acted upon on motion by Dr. Esterly, seconded by Mr. Robertson, that the secretary be instructed

to cast an electing vote. New names were: W. H. Workman, Belfast, Ireland, by W. Leon Dawson; and Harry H. Johnson, Pittsfield, Maine, by W. Lee Chambers.

A communication from the Secretary of the Pacific Division, American Association for the Advancement of Science, relative to the annual meeting, was read. Unanimous approval was given the action of the executive committee in naming Messrs, Grinnell and Swarth as editors, and Law and Chambers as business managers, to succeed themselves in office for the ensuing year.

In the hour of general discussion that followed the formal meeting, various theories as to the cause of the unusual appearance of mountain birds in the valleys were considered. A large flock of Bohemian Waxwings was reported as having been seen almost daily for a number of weeks in a nearby town; and a member recently returned from the desert recorded the finding of several nests of the Leconte Thrasher, with eggs or young, on February 21. Adjourned.—L. E. Wyman, *Secretary.*

March.—The regular monthly meeting of the Southern Division, Cooper Ornithological Club, was held on March 25 at 8 P. M., at the Museum of History, Science and Art. President Miller officiated, with other members in attendance as follows: Messrs, Appleton, Dickey, Hanaford, Howell, Lamb, Little, Nokes, Peyton, Pierce, Reis, Selwyn Rich, and Wyman. Visitors were Mrs. Waldorf and Mr. Woods.

Minutes of the February meeting were read and approved. Harry H. Johnson, Pittsfield, Maine, and W. H. Workman, Belfast, Ireland, were elected to membership on motion of Mr. Reis, seconded by Mr. Lamb. New names presented were: Albert Lano, Fayetteville, Ark., by J. E. Law; Helen S. Pratt, Eagle Rock; Eric Deane Sismey, Penticton, B. C., Canada; Cecil Hart, Los Angeles; Robert S. Woods, Los Angeles; Johnson Andrew Neff, Marionville, Mo.; and Chauncey J. Hawkins, Lowell, Mass., by W. Lee Chambers; John Burnham, San Diego, by A. M. Ingersoll; Nathan F. Leopold, Jr., Chicago, by Henry K. Coale.

Inquiry from the secretary of the Pacific Division, American Association for the Advancement of Science, as to what part the Cooper Club proposed to take in the forthcoming meeting at Seattle, resulted in a motion by Mr. Reis, seconded by Mr. Dickey, that the Cooper Club affiliate with the Western Society of Naturalists, in taking part in the program. Motion carried. An invitation from the Southwest Museum, to hold a meeting at that institution as guests of the Bird Lovers' Club, met unanimous favor; April 29 was designated as an acceptable time, as this falls on a regular meeting date.

The question of publishing notice of meetings, in daily papers, as a means of increasing attendance and membership in the Club, was brought before the members. It was the sense of the members that Club meetings, as generally conducted, would have little or no interest for the public; and a motion by Mr. Dickey, that the secretary use his judgment as to publishing notice of meetings of unusual interest, was carried.

Inspection of a tray of study skins of the family Alcidae, and the general round of discussion of matters ornithological, completed the session. Adjourned—L. E. Wyman, *Secretary.*

DIRECTORY OF MEMBERS OF THE COOPER ORNITHOLOGICAL CLUB

Revised to May 1, 1920

Residence in California unless otherwise stated. Year following address indicates date of election; year in parenthesis indicates date honorary member joined the Club. Star preceding name indicates life member.

HONORARY MEMBERS

Allen, Dr. J. A., Amer. Museum Nat. Hist., New York, N. Y. 1910.

Henshaw, H. W., Biol. Survey, Washington, D. C. 1909.

Merriam, Dr. C. Hart, 1919 16th St., Washington, D. C. 1909.

Nelson, E. W., Biol. Survey, Washington, D. C. (1904) 1917.

Ridgway, Robert, 3306 New Hampshire Ave., N. W., Washington, D. C. 1905.

Stephens, Frank, 3746 Park Blvd., San Diego. (1894) 1912.

ACTIVE MEMBERS

Abernathy, Frieda (Mrs. S. E.), 2300 Durant Ave., Berkeley. 1914.

Adams, Benjamin, 155 Amity St., Brooklyn, N. Y. 1920.

Alexander, Miss Annie M., Suisun. 1908.

Alexander, E. Gordon, 1603 South St., Lexington, Mo. 1918.

Allen, Dr. A. A., McGraw Hall, Ithaca, N. Y. 1911.

Allen, Mrs. Amelia S., 37 Mosswood Road, Berkeley. 1913.
Ames, Miss Isabel, 3605 20th St., San Francisco. 1920.
Anderson, Mrs. Malcolm P., 1419 Versailles St., Alameda. 1920.
Anderson, Dr. Rudolph M., Biol. Div., Geol. Survey, Ottawa, Ont., Canada. 1916.
Andrews, E. R., 315 E. 19th St., Oakland. 1920.
*Appleton, J. S., 1332 Citrus Ave., Hollywood. 1901.
Armstrong, Edward E., 2249 Calumet Ave., Chicago, Ill. 1914.
Arnold, E., Grand Trunk Ry., Montreal, Que., Canada. 1909.
Arnold, Dr. Ralph, 825 Union Oil Bldg., Los Angeles. 1893.
Arnold, Dr. W. W., 504 N. Nevada Ave., Colorado Springs, Colo. 1911.
Arthur, Stanley Clisby, Dept. of Conservation, New Orleans, La. 1918.
Atkinson, W. L., 35 Hawthorne Way, San Jose. 1901.
Atsatt, Miss Sarah R., 345 S. Serrano Ave., Los Angeles. 1911.
Austin, Lloyd, 2809 Forrest Ave., Berkeley. 1920.
Ayer, Ethel C., 1301 Jackson St., Oakland. 1920.
Badé, Wm. F., 2616 College Ave., Berkeley. 1903.
Badger, M. C., Santa Paula. 1915.
Bailey, Alfred M., Biol. Survey, Washington, D. C. 1917.
Bailey, Bernard, R.D. 1, Box 97, Elk River, Minn. 1911.
*Bailey, Florence M. (Mrs. Vernon), 1834 Kalorama Road, Washington, D. C. 1910.
Bailey, H. H., 319 54th St., Newport News, Va. 1903.
Bailey, Vernon, 1834 Kalorama Road, Washington, D. C. 1904.
Baisley, W. Denton, 445 Oak St., Glendale. 1920.
Baldwin, S. G., 832 Kipling Ave., Palo Alto. 1920.
Bales, Dr. B. R., 149 W. Main St., Circleville, Ohio. 1906.
Ballard, Maria V., 1917 Baker St., San Francisco. 1919.
Bamford, Mrs. G. L., 1428 Castro St., Oakland. 1918.
Bancroft, Griffing, Cuyamaca Club, San Diego. 1920.
Bangs, Outram, Museum Comp. Zool., Cambridge, Mass. 1906.
Barker, Fred, Parkers Prairie, Minn. 1914.
Barnes, Claude T., 359 10th Ave., Salt Lake City, Utah. 1915.
Barnes, R. Magoon, Lacon, Ill. 1908.
Barrows, Prof. Walter B., Box 1047, East Lansing, Mich. 1909.
Bassett, F. N., 1338 8th St., Alameda. 1919.
Batchelder, Chas. F., 7 Kirkland St., Cambridge, Mass. 1910.
*Beck, Rollo H., R.D. 21, San Jose. 1894.
Bell, B. C., 235 8th St., San Francisco. 1919.
Bennett, R. H., 246 Southern Pacific Bldg., San Francisco. 1909.
Bent, A. C., 140 High St., Taunton, Mass. 1909.
Benton, Thos. H., Jr., 2821 Van Buren St., Alameda. 1916.
Bergtold, Dr. W. H., 1159 Race St., Denver, Colo. 1917.
Bicknell, Mrs. F. T., 319 S. Normandie Ave., Los Angeles. 1913.
Bigelow, Homer L., 37 Old Orchard Road, Chestnut Hill, Mass. 1910.
Bishop, Dr. Louis B., 365 Orange St., New Haven, Conn. 1904.
Blake, Mrs. Edwin T., 2233 Piedmont Ave., Berkeley. 1917.
Blayney, Nita A., 920 O St., Fresno. 1911.
Bliss, John D., Pozo, San Luis Obispo Co. 1916.
Boeing, W. E., The Highlands, R.D. 2, Seattle, Wash. 1914.
Bolander, L. Ph., Jr., 1947 E. 28th St., Oakland. 1907.
Bolt, B. F., 1421 Prospect Ave., Kansas City, Mo. 1916.
Borell, Adrey E., 227 Calaveras Ave., Fresno. 1918.
Bowdish, B. S., Demarest, N. J. 1910.
Bowles, J. H., The Woodstock, Tacoma, Wash. 1903.
Boyle, Ashby D., 380 E. St., Salt Lake City, Utah. 1915.
Boynton, Charles T., 1005 S. Sheridan Road, Highland Park, Ill. 1919.
*Bradbury, W. C., 1440 Race St., Denver, Colo. 1913.
Braislin, Dr. William C., 425 Clinton Ave., Brooklyn, N. Y. 1910.
Brandt, H. W., 2025 E. 88th St., Cleveland, Ohio. 1914.
Bridges, Mrs. Harriette W., 2628 Benvenue Ave., Berkeley. 1918.
Brooks, Major Allan, Okanagan Landing, B. C., Canada. 1906.
Brooks, L., Box 539, New Bedford, Mass. 1913.
Brouse, W. A., 3623 5th Ave., Los Angeles. 1916.

Brown, Arthur G., 359 Monadnock Bldg., San Francisco. 1920.
Brown, D. E., 2452 Beacon Ave., Seattle, Wash. 1909.
*Brown, Edward J., 1609 S. Van Ness Ave., Los Angeles. 1915.
Brown, G. Franklin, Needham, Mass. 1918.
Brown, Mrs. Herbert, 434 E. 2d St., Tucson, Ariz. 1914.
Brown, W. W., Jr., Long Beach. 1909.
Brownlee, Mrs. W. L., 912 S. Carondelet St., Los Angeles. 1919.
Brune, Leo, Grand Dalles, Wash. 1919.
Bryant, Dr. Harold C., Museum Vert. Zool., Berkeley. 1910.
Bull, Daniel Bernard, 731 E. St. James St., San Jose. 1919.
Burk, Genevieve S., 1847 Bancroft Way, Berkeley. 1920.
Burleigh, Thos. D., 825 N. Negley Ave., Pittsburg, Pa. 1918.
Burnett, W. L., State Agr. Coll., Fort Collins, Colo. 1910.
Burnham, Dr. Clark, Bushnell Place, Berkeley. 1907.
Burnham, John, Timken Bldg., San Diego. 1920.
Burns, Frank L., Berwyn, Pa. 1909.
Burtch, Verdi, Branchport, N. Y. 1910.
Buturlin, Sergius A., Wesenberg, Esthonia, Russia. 1909.
Caduc, E. E., 531 Massachusetts Ave., Bos- City, Utah. 1917.
Calder, James A., 60 E. 4th South St., Salt Lake City, Utah. 1917.
Camp, Chas. L., Amer. Museum Nat. Hist., New York, N. Y. 1909.
Cantwell, George G., Puyallup, Wash. 1915.
Carpenter, N. K., 4802 Utah St., San Diego. 1901.
Carriger, H. W., 5185 Trask Ave., Oakland. 1895.
Case, Rev. Bert F., Tolland, Conn. 1913.
Case, C. M., 306 Blue Hills Ave., Hartford, Conn. 1911.
Chamberlain, C. W., 36 Lincoln St., Boston, Mass. 1912.
*Chambers, W. Lee, Eagle Rock. 1897.
Chapman, Frank M., Amer. Museum Nat. Hist., New York, N. Y. 1903.
Cheesman, M. R., R.D. 1, Rivera. 1919.
Cheney, Miss Mary, South Manchester, Conn. 1919.
*Childs, John Lewis, Floral Park, N. Y. 1904.
Clark, Josiah H., 238 Broadway, Patterson, N. J. 1910.
Clark, Walter, 424 S. Broadway, Santa Ana. 1919.
Clay, C. Irvin, Box 353, Eureka. 1910.
Clifton, H. T., 509 E. Walnut St., Pasadena. 1904.
Coale, Henry K., Highland Park, Ill. 1907.
Coffin, Robert L., Mass. Agr. Exp. Station, Amherst, Mass. 1920.
Coggins, Herbert L., 2929 Piedmont Ave., Berkeley. 1910.
Cohen, Donald A., 2618 Lincoln St., Alameda. 1901.
*Colburn, A. E., 806 S. Broadway, Los Angeles. 1905.
Cole, Mrs. A. H., 2827 Hillegass Ave., Berkeley. 1917.
Cole, F. R., Box 575, Palo Alto. 1920.
Cook, Fred'k W., 1604 Harrison St., Seattle, Wash. 1919.
Cooke, Miss M. T., 1328 12th St., Washington, D. C. 1918.
Cookman, Alfred, 1448 4th St., Santa Monica. 1912.
Cooper, J. S., 827 54th St., Oakland. 1903.
Cope, Francis R., Jr., Dimock, Penn. 1919.
Cox, H. E., care C. H. Reed Co., San Luis Obispo. 1916.
Cox, Richard, 3d, 5401 Belgrave Place, Oakland. 1919.
Crane, Ada Ethel, Box 607, Westwood. 1914.
Craven, Jesse T., 811 Roosevelt Ave., Detroit, Mich. 1909.
Crosby, Maunsell S., Grasmere Farms, Rhinebeck, N. Y. 1911.
Crum, Miss Ethel, Bret Harte Inn, Grass Valley. 1920.
Culver, Susan B., 2423 Prospect St., Berkeley. 1914.
Cummings, Byron, Univ. Ariz., Tucson, Ariz. 1916.
Currier, Ed. S., 416 E. Chicago St., St. Johns Sta., Portland, Ore. 1904.
Davenport, Mrs. Elizabeth B., Northern Ave., Brattleboro, Vt. 1911.
Davidson, Pirie, East Hall, Univ. Cal., Berkeley. 1916.
Davies, A. E., 1327 Grove St., Berkeley. 1920.
Davis, Benjamin J., 2525 Piedmont Ave., Berkeley. 1916.
Davis, Dr. Fred B., 401 Vernon St., Oakland. 1916.
Davis, J. M., 811 O St., Eureka. 1908.
*Dawson, W. Leon, R.D. 3, Box 83, Santa Barbara. 1906.
Day, Chester S., 15 Custom House St., Boston, Mass. 1910.
Dean, W. F., Three Rivers. 1901.
Deane, Ruthven, 112 W. Adams St., Chicago, Ill. 1904.

Deane, Wallace A., 1266 Columbia Road, Washington, D. C. 1919.
Deane, Walter, 29 Brewster St., Cambridge, Mass. 1907.
Dearborn, Ned, Linden, Md. 1909.
Decker, F. R., Kiona, Wash. 1913.
DeGroat, Dudley S., Normal Hill Center, Los Angeles. 1916.
Dice, Dr. Lee R., Museum of Zoology, Ann Arbor, Mich. 1914.
Dickenson, A. B., 1510 Girard St., Los Angeles. 1916.
*Dickey, Donald R., San Rafael Heights, Pasadena. 1910.
Dille, F. M., Valentine, Neb. 1903.
Dings, G. M., 5715 Von Versen Ave., St. Louis, Mo. 1920.
Dixon, Joseph, Museum Vert. Zool., Berkeley. 1904.
Dodge, Laura I., 3031 Eliot St., Long Beach. 1915.
Dodge, Ralph E., 225 Pacific Ave., Santa Cruz. 1915.
Dodge, Mrs. Rowland B., 2234 Piedmont Ave., Berkeley. 1920.
Drachman, Myra, 3031 Eliot St., Long Beach. 1915.
DuBois, Alexander Dawes, 327 S. Glenwood Ave., Springfield, Ill. 1911.
Duprey, H. F., R.D. 1, Box 78B, Dixon. 1907.
Durfee, Owen, Box 125, Fall River, Mass. 1911.
Dutcher, William, 949 Park Ave., Plainfield, N. J. 1905.
Dwight, Dr. Jonathan, Jr., 43 W. 70th St., New York, N. Y. 1904.
Eaton, S. Harrison, Box 653, Lawrenceville, Ill. 1916.
Edson, J. M., Marietta Road, Bellingham, Wash. 1911.
Edwards, H. Arden, R.D. 1, Box 284, Los Angeles. 1913.
*Eggleston, Prof. Julius W., 239 William St., New London, Conn. 1913.
Emerson, W. Otto, Palm Cottage, Hayward. 1920.
Esterly, Dr. C. O., Occidental College, Los Angeles. 1908.
Evans, Frank C., Crawfordsville, Ind. 1918.
Evans, J. Harold, R.D. 4, Box 500, Santa Rosa. 1917.
Evermann, Dr. Barton W., Cal. Acad. Sciences, San Francisco. 1911.
Falger, Annie M. (Mrs. Wm.), Modesto. 1917.
Fargo, Mrs. Minerva J., 1632 N. Kingsley Drive, Los Angeles. 1914.
Felger, A. H., North Side High School, Denver, Colo. 1920.
Felton, Mrs. C. N., Menlo Park. 1916.
Ferguson, Elizabeth, 1 Mosswood Road, Berkeley. 1918.
Ferguson, Mrs. Mary Van E., 1 Mosswood Road, Berkeley. 1915.
Field, Mrs. Chas. A., 534 27th St., Oakland. 1916.
Field, Clyde, 1859 Julian Ave., San Diego. 1919.
Field, Dr. George W., Biol. Survey, Washington, D. C. 1918.
Finley, Wm. L., 651 E. Madison St., Portland, Ore. 1900.
Fish, Mrs. Frances Webster, 2325 Piedmont Ave., Berkeley. 1917.
Fisher, Dr. A. K., Biol. Survey, Washington, D. C. 1904.
Fisher, Miss Elizabeth W., 2222 Spruce St., Philadelphia, Pa. 1910.
Fisher, Walter K., Stanford Marine Laboratory, Pacific Grove. 1900.
Fitzpatrick, T. J., Bethany, Neb. 1913.
Fleming, J. H., 267 Rusholme Road, Toronto, Ont., Canada. 1910.
Fletcher, Lyle R., Box 455, Norton, Kan. 1920.
Flint, Wm. R., 244 N. Madison Ave., Pasadena. 1912.
Flinn, Catharine Mills, 1799 University Ave., Berkeley. 1920.
Flynn, Helen, 1546 Shattuck Ave., Berkeley. 1920.
Forbush, E. H., State House, Boston, Mass. 1916.
Forrest, Earle R., 261 Locust Ave., Washington, Pa. 1910.
Fortiner, John C., Brawley. 1910.
Fowler, Frederick H., 221 Kingsley Ave., Palo Alto. 1901.
French, James G., The Menagerie, 3628 Saanich Road, Victoria, B. C., Canada. 1918.
Frye, T. C., Univ. Wash., Seattle, Wash. 1919.
Fuertes, Louis A., 201 Wyckoff Ave., Ithaca, N. Y. 1904.
Furber, John J., Klamath Falls, Ore. 1918.
Gabrielson, Ira N., 220 P. O. Bldg., Portland, Ore. 1919.
Gartrell, Geo. N., Summerland, B. C., Canada. 1917.
Gault, Benj. T., 2313 Washington Blvd., Chicago, Ill. 1905.
Gay, Harold S., 200 S. Wilson Ave., Alhambra. 1901.
Geiselhart, Josephine, Concord. 1920.
Germain, Miss Claire, 3906 W. 1st St., Los Angeles. 1915.
Gianini, Chas. A., Poland, N. Y. 1919.

Gifford, Dr. Harold, 420 S 36th St., Omaha, Neb. 1916.
Giles, Roscoe I., 82 Newton St., Marlborough, Mass. 1917.
Gilman, M. French, Banning. 1901.
Girvin, F. H., Brawley Hardware Co., Brawley. 1919.
Goelitz, Herman, 331 Seneca Parkway, Rochester, N. Y. 1920.
Goelitz, Walter A., 376 Flower City Park, Rochester, N. Y. 1915.
Goethe, C. M., Capital Natl. Bank Bldg., Sacramento. 1915.
Goldman, E. A., Biol. Survey, Washington, D C. 1901.
Goldman, Luther J., Pendleton, Idaho. 1902.
Goodcell, Mrs. Marion L., 864 D St., San Bernardino. 1914.
Gormley, A. L., Box 80, Arnprior, Ont., Canada. 1918.
Gosse, Capt. Philip, Saville Club, 107 Piccadilly W., London, England. 1917.
Gould, Joseph E., Box 126, Arcadia, Fla. 1909.
Grant, U. S., 4th, Harvard Club, 27 W. 44th St., New York, N. Y. 1909.
Granville, Fred L., Box 93, Universal City. 1910.
Green, Mrs. Millard L., 247 E. Sea Side Blvd., Long Beach. 1920.
Greenleaf, Joseph T., Jr., 602 14th St. N., Seattle, Wash. 1920.
Grey, Henry, R.D. 2, Box 154A, San Diego. 1901.
Griffee, Bill, R.D. 3, Box 68, Corvallis, Ore. 1919.
Griffin, Eva F., 3508 Richmond Ave., Oakland. 1918.
Grinnell, Geo. Bird, 238 E. 15th St., New York, N. Y. 1914.
Grinnell, Hilda Wood, 2811 College Ave., Berkeley. 1912.
*Grinnell, Dr. Joseph, Museum Vert. Zool., Berkeley. 1894.
Guion, Geo. Seth, Napoleonville, La. 1911.
Gunn, Miss Amy E., 1342 Filbert St., San Francisco. 1914.
Gunthorp, Horace, 1525 College Ave., Topeka, Kan. 1920.
Guthrie, Miss Esther, Woodland. 1918.
Hadeler, E. W., Painesville, Ohio. 1918.
Hall, Mrs. Carlotta C., 1615 La Loma Ave., Berkeley. 1915.
Hall, Ivan C., Dept. of Hyg. and Bact., Univ. Chicago, Chicago, Ill. 1919.
Halladay, Daniel S., R.D. 3, Box 201, Anaheim. 1910.
Hanaford, A. W., R.D. 9, Box 700, Los Angeles. 1917.
Hands, Frank H., Dos Cabezos, Ariz. 1920.
Hanford, Forrest, 3825 Division St., Oakland. 1912.
Hann, H. H., Parkdale, Ore. 1909.
Hanna, W. C., 1000 Pennsylvania Ave., Colton. 1902.
Harlow, Richard C., 369 Foster Ave., State College, Penn. 1919.
Harmon, Mrs. Frances M., 2115 Estrella Ave., Los Angeles. 1912.
Harper, Francis, Biol. Survey, Washington, D. C. 1920.
*Harris, Harry, Post Office, Kansas City, Mo. 1914.
Harrison, H. M., 503 Linden St., Camden, N. J. 1920.
Hart, Cecil, R.D. 6, Box 432, Los Angeles, 1920.
Hartman, Paul J., 1118½ Maple Ave., Los Angeles. 1917.
Hathaway, H. S., Box 1466, Providence, R. I. 1912.
Havemeyer, Henry O., 129 Front St., New York, N. Y. 1917.
Hawkins, Chauncey J., 129 Fairmont St., Lowell, Mass. 1920.
Hayes, Mrs. F. M., Box 591, Davis. 1919.
Head, Anna, 2809 Forest Ave., Berkeley. 1912.
Heath, Harold, 1147 Ramona St., Palo Alto. 1919.
Hedges, Chas. F., Box 24, Miles City, Mont. 1919.
Heineman, Oluf J., 1664 Grove St., San Francisco. 1908.
Heller, Edmund, Amer. Museum Nat. Hist., New York, N. Y. 1894.
Helme, Arthur H., Miller Place, Suffolk Co., N. Y. 1911.
Henderson, Dr. H. C., Casitas Road, Carpinteria. 1919.
Henderson, Junius, 627 Pine St., Boulder, Colo. 1909.
Henderson, Walter C., Biol. Survey, Washington, D. C. 1918.
Hendren, Miss Elizabeth, Occidental. 1920.
Henshaw, Judge F. W., 762 Mills Bldg., San Francisco. 1915.
Hersey, F. Seymour, 6 Maple Ave., Taunton, Mass. 1915.
Hersey, L. J., Wray, Colo. 1909.
Higgins, Elmer, 17 Bonita Ave., Long Beach. 1919.
Hill, James H., Box 485, New London, Conn. 1919.
Hill, Willard, Star Route, Wasco, Kern Co. 1918.
Hoag, Mrs. G. B., Elko, Nev. 1916.

Hoffman, Louis E., Box Cor. Benner and Shults Sts., Los Angeles. 1920.
Hoffman, Ralph, Stockbridge, Mass. 1920.
*Holland, Harold M., Galesburg, Ill. 1901.
Hollister, N., Nat. Zool. Park, Washington, D. C. 1920.
Holman, F. C., 558 Lincoln Ave., Palo Alto. 1914.
*Hoover, Theodore J., 450 Melville Ave., Palo Alto. 1898.
Horn, Everett E., 220 P. O. Bldg., Portland, Ore. 1919.
Horsfall, R. Bruce, 1457 E. 18th St., Port-Portland, Ore. 1914.
Horsfall, Mrs. R. Bruce, 1457 E. 18th St., Portland, Ore. 1916.
Howard, O. W., Box 484, Los Angeles. 1895.
*Howell, A. B., 268 S. Orange Grove Ave., Pasadena. 1908.
Howell, Arthur H., 2919 S. Dakota Ave., Washington, D. C. 1916.
Howell, B. F., Jr., 52 Patton Ave., Princeton, N. J. 1909.
Howes, Paul G., 91 Hope St., Stamford, Conn. 1910.
Hubbard, S., 244 Montecito Ave., Oakland. 1912.
Huber, Wharton, Gwynedd Valley, Pa. 1915.
Hudson, L. W., 201 Bellview Ave., Porterville. 1917.
Huey, Laurence, Nat. Hist Museum, Balboa Park, San Diego. 1909.
Humphreys, E. B., 3330 Fernside Blvd., Alameda. 1919.
Hungate, J. W., State Normal, Cheney, Wash. 1918.
Hunt, C. J., 5847 W. Superior St., Chicago, Ill. 1919.
Hunt, Edwin B., 4318 14th St., N. W., Washington, D. C. 1914.
Hunt, Richard, Museum Vert. Zool., Berkeley. 1918.
Hunter, J. S., Box 482, San Mateo. 1903.
Husher, Mrs. Gertrude H., 821 S. Hope St., Los Angeles. 1913.
Hussey, Roland F., Dept. of Animal Biol., Univ. Minn., Minneapolis, Minn. 1916.
Illingsworth, J. F., Gordonvale, Cairns, N. Queensland. 1896.
Illo, Howard C., 11th and Main Sts., Los Angeles. 1920.
Ingersoll, Albert M., 908 F St., San Diego. 1895.
Isham, C. Bradley, 27 W. 67th St., New York, N. Y. 1909.
Jackson, Ralph W., R.D. 1, Cambridge, Md. 1917.
Jackson, Thos. H., 304 N. Franklin St., West Chester, Pa. 1911.
Jacobs, J. Warren, 404 S. Washington St, Waynesburg, Pa. 1909.
Jacobsen, W. C., Rodent Control Div., Comm. Hort., Sacramento, Calif. 1916.
Jay, Antonin, 1622 Pennsylvania Ave., Los Angeles. 1901.
Jenkins, Ida G., 30 Dearborn St., Roxbury, Mass. 1914.
Jenks, S. Herbert, 1730 N. Fair Oaks Ave., Pasadena. 1918.
Jenney, Chas. F., 100 Gordon Ave., Hyde Park, Mass. 1917.
Jessee, Dr. R. L., Philo, Ill. 1909.
Jesurun, Dr. Mortimer, 443 Emerson St., Palo Alto. 1916.
Jewett, Stanley G., 582 Bidwell Ave., Portland, Ore. 1909.
Job, Herbert K., 291 Main St., West Haven, Conn. 1915.
Johnson, A. C., Whittier Nat. Bank, Whittier. 1919.
Johnson, Frank Edgar, 16 Amackassin Terrace, Yonkers, N. Y. 1911.
Johnson, H. H., Pittsfield, Me. 1920.
Johnson, Dr. Myrtle E., National City. 1908.
Johnston, Ivan Murray, W. 8th St., Upland. 1920.
Johnstone, W. B., Edgewood, B. C., Canada. 1918.
Jonas, Coloman, 1023 Broadway, Denver, Colo. 1910.
Jones, Dr. Lombard Carter, Falmouth, Mass. 1918.
Jones, Dr. Lynds, Museum Oberlin Coll., Oberlin, Ohio. 1911.
Jordan, A. H. B., Everett, Wash. 1911.
Jordan, Dr. David Starr, Stanford University. 1902.
Judson, W. B., 826 Washington Bldg., Los Angeles. 1894.
Kaeding, Geo. L., Cortez, Lander Co., Nev. 1903.
Kelley, Mrs. Harriet P., 2505 Logan St., Selma. 1917.
Kellogg, Miss Louise, Box 248, Suisun. 1911.
Kellogg, Ralph T., Silver City, N. M. 1916.
Kellogg, Prof. Vernon L., Stanford University. 1901.
Kelly, Junea W. (Mrs. G. E.), 1311 Grand St., Alameda. 1918.
*Kennard, Frederick H., Dudley Road, Newton Centre, Mass. 1911.
Kennedy, Clarence H., Zool. Dept., State College, West Raleigh, N. C. 1912.
Kermode, F., Provincial Museum, Victoria, B. C., Canada. 1911.
Keyes, Prof. Chas. R., Mt. Vernon, Iowa. 1900.
Kibbe, A. S., 1534 Grove St., Berkeley. 1917.

Kibbe, Bessie W. (Mrs. A. S.), 1534 Grove St., Berkeley. 1917.
Kimball, H. H., Yuma, Ariz. 1909.
Kirn, Albert J. B., Winslow, Ark. 1918.
Kitchin, E. A., 4014 N. 35th St., Tacoma, Wash. 1917.
Kittredge, Joseph, Jr., U. S. Forest Service, Washington, D. C. 1915.
Kluegel, Mrs. Edward A., Carmel. 1916.
Knickerbocker, Chas. K., 445 N. Sacramento Ave., Carpenter Sta., Chicago, Ill. 1905.
Knowlton, Dr. F. H., U. S. Nat. Museum, Washington, D. C. 1910.
Kofoid, Prof. C. A., Zool. Dept., Univ. Cal., Berkeley. 1909.
Kohler, Louis S., 47 Wagner Place, Hawthorne, N. J. 1909.
Krehbiel, Leonard, Upland. 1919.
Kretzman, Prof. P. E., 3337A Oregon Ave., St. Louis, Mo. 1914.
Kuser, John Dryden, Bernardsville, N. J. 1912.
Kuykendall, W. A., Eugene, Ore. 1916.
Labarthe, Jules, 85 Second St., San Francisco. 1914.
Ladd, Harry Stephen, 4354 McPherson Ave., St. Louis, Mo. 1918.
LaJeunesse, H. V., 2517 Webb St., Alameda. 1916.
Lamb, Chester C., 549 W. 43d Place, Los Angeles. 1899.
Lancashire, Mrs. J. H., 7 E. 75th St., New York, N. Y. 1911.
Lander, Bessie M., Box 354, Exeter. 1920.
Lane, Geo. W., Morgan Hill. 1914.
Lano, Albert, 220 E. Lafayette Ave., Fayetteville, Ark. 1920.
Lastreto, C. B., 260 California St., San Francisco. 1913.
*Law, J. Eugene, Museum Vert. Zool., Berkeley. 1900.
*Law, Laura Beatty (Mrs. J. E.), Museum Vert. Zool., Berkeley. 1915.
Lawson, Ralph, 88 Washington Square, Salem, Mass. 1918.
Layne, J. Gregg, 737 S. Spring St., Los Angeles. 1912.
Leach, Frank A., 217 Hillside Ave., Piedmont. 1917.
Ledig, Ruth A., S. Branch, Univ. Calif., Los Angeles. 1919.
Lee, Mrs. Melicent H., El Cajon. 1920.
Leggett, Dr. R. M., 411 Gunst Bldg., 323 Geary St., San Francisco. 1918.
Lelande, H. J., 687 Irolo St., Los Angeles. 1897.
Leopold, Aldo, 135 S. 14th St., Albuquerque, N. M. 1916.
Leopold, Nathan F., Jr., 4754 Greenwood Ave., Chicago, Ill. 1920.
Libby, Miss Gretchen L., La Vina Sanitorium, La Vina. 1911.
Lien, Carl, Clallam Bay, Wash. 1917.
Ligon, J. Stokley, Box 131, Albuquerque, N. M. 1914.
Lilienerantz, H. T., Rancho Las Cimas, Hollister. 1916.
Lindsay, Dr. D. Moore, 808 Boston Bldg., Salt Lake City, Utah. 1915.
Litsey, Jno. B., Jr., 2611 May St., Fort Worth, Tex. 1911.
Little, Luther, 1403 Garfield Ave., S. Pasadena. 1914.
Littlejohn, Chase, 1226 Warren St., Redwood City. 1901.
Lombardi, Ethel, 2331 Le Conte Ave., Berkeley. 1916.
Loomis, Leverett M., Cal. Acad. Sciences, San Francisco. 1902.
Loring, J. Alden, Owego, Tioga Co., N. Y. 1914.
Love, Guy, R.D. 5, Oberlin, Kan. 1913.
Luther, Clarence H., 8 McElroy Bldg., Fayetteville, Ark. 1909.
McAtee, W. L., Biol. Survey, Washington, D. C. 1907.
McDuff, Esther, 555 Union Ave., San Bernardino. 1919.
*McGregor, R. C., Bureau of Science, Manila, P. I. 1893.
McGrew, Albert D., 5611 Stanton Ave., Pittsburg, Pa. 1920.
McLain, R. B., Box 132, Hollywood. 1897.
McLean, Donald D., Coulterville. 1916.
McLellan, Miss Mary E., 2935 Pine St., Berkeley. 1919.
McMullen, Turner E., 551 Bailey St., Camden, N. J. 1920.
Mackay, Miss Susan H., 2214 Dana St., Berkeley. 1920.
Madison, Harold L., Park Museum, Providence, R. I. 1917.
Magee, William A., Jr., R.D. Fruitvale, Box 433, Oakland. 1912.
Mailliard, Ernest C., Federal Reserve Bank, San Francisco. 1909.
Mailliard, John W., 230 California St., San Francisco. 1894.
*Mailliard, Joseph, 1815 Vallejo St., San Francisco. 1895.
Marshall, Dr. Benj. M., 2036 D St., Eureka. 1913.
Martin, De Loach, 1223 S. Washington Ave., Marshall, Texas. 1916.
Massey, Herbert, Ivy Lea, Burnage, Didsbury, Manchester, England. 1909.
Mead, Mrs. Edwin B., 2618 Etna St., Berkeley. 1920.

Meade, Grace S. (Mrs. Calvert), 6 Van Buren Court, Oakland. 1916.
Meadows, Donald C., Smiley Hall, Claremont. 1919.
Meeker, Jesse C. A., Box 161, Danbury, Conn. 1907.
Meister, H. D., Wauseon, Ohio. 1909.
Mercer, John D., 104 W. 1st St., Los Angeles. 1918.
*Mershon, W. B., Saginaw, Mich. 1911.
Meyer, Miss Heloise, Overlee, Lenox, Mass. 1914.
Middleton, R. J., Jeffersonville, Pa. 1918.
Miller, Mrs. E. C. T., 1010 Euclid Ave., Cleveland, Ohio. 1914.
Miller, Dr. Loye Holmes, S. Branch, Univ. Calif., Los Angeles. 1905.
Miller, Mary Mann, 5928 Hayes Ave., Los Angeles. 1920.
Miller, W. De Witt, Amer. Museum Nat. Hist., New York, N. Y. 1909.
Mills, Enos A., Longs Peak, Estes Park, Colo. 1914.
Miner, Dr. H. N., Colfax, Placer Co. 1903.
Mitchell, H. H., Prov. Museum, Normal School, Regina, Sask., Canada. 1915.
Mitchell, Dr. Walton I., Paonia, Delta Co., Colo. 1909.
Moffitt, James, 1818 Broadway, San Francisco. 1917.
Moore, Miss Nellie, 122 Falcon Ave., Long Beach. 1915.
Moore, Raymond W., 441 Emerson St., Palo Alto. 1919.
Moore, Robert T., 46 Mansion Ave., Haddonfield, N. J. 1911.
Moran, R. B., 1318 S. Gramercy Place, Los Angeles. 1897.
*Morcom, G. Frean, 243 N. Coronado St., Los Angeles. 1904.
More, R. L., Vernon, Texas. 1911.
Morley, S. Griswold, 2535 Etna St., Berkeley. 1916.
Mueller, Carl, Marysville. 1911.
Mullen, James L., 614 E. 6th South St., Salt Lake City, Utah. 1915.
Munro, J. A., Okanagan Landing, B. C., Canada. 1914.
Murie, Olaus J., 219 7th Ave. S., Moorehead, Minn. 1913.
Myers, Mrs. H. W., 311 N. Ave. 66, Los Angeles. 1912.
Neff, Johnson A., Marionville, Mo. 1920.
Neilson, Mrs. Katherine, 1419 Versailles St., Alameda. 1920.
Newhall, Mrs. Chas. S., 2629 Piedmont Ave., Berkeley. 1916.
Nichols, J. T., Amer. Museum Nat. Hist., New York, N. Y. 1909.
Nicholson, Donald J., Orlando, Fla. 1911.
Nicholson, Gordon, W. 7th St., Ontario. 1919.
Noack, H. R., 309 Perry St., Oakland. 1901.
Nokes, Dr. I. D., 134 W. 55th St., Los Angeles. 1914.
Norris, Joseph Parker, Jr., 2122 Pine St., Philadelphia, Pa. 1911.
Norris, Roy, 725 N. 10th St., Richmond, Ind. 1911.
Norton, Arthur H., 22 Elm St., Portland, Me. 1918.
Oberholser, Dr. Harry C., 2805 18th St., N. W., Washington, D. C. 1904.
O'Connell, John, 425 New Call Bldg., San Francisco. 1919.
O'Farrell, Mrs. Mabel E., 2403 F. St., San Diego. 1917.
Ohl, H. C., McKittrick. 1913.
Ohlendorf, W. C., 1924 Blue Island Ave., Chicago, Ill. 1910.
Osencup, Claten, 1267 Sunset Ave., Pasadena. 1917.
Osgood, Wilfred H., Field Museum Nat. Hist., Chicago, Ill. 1893.
Osterhout, Geo. E., Windsor, Colo. 1915.
Owen, Virgil W., 832 Beacon St., Los Angeles. 1896.
Palmer, Miss Elizabeth Day, 1741 Harvard Blvd., Los Angeles. 1909.
Palmer, R. H., The Bryant, Palo Alto. 1915.
Palmer, Dr. T. S., 1939 Biltmore St., N. W., Washington, D. C. 1903.
Parcell, Zulema L., 802 W. Washington St., Los Angeles. 1919.
Parker, Herbert, South Lancaster, Mass. 1911.
Parks, H. O., Willcox, Ariz. 1919.
Parmenter, Henry E., Greyson Hotel, Santa Barbara. 1916.
Paul, J. H., 1320 E. 2d St. South, Salt Lake City, Utah. 1915.
Paul, Lucius H., 1485 North St., Rochester, N. Y. 1911.
Peabody, Rev. P. B., Blue Rapids, Kan. 1904.
Pearson, T. Gilbert, 1974 Broadway, New York, N. Y. 1910.
Peck, Miss L. M., 1510 Girard St., Los Angeles. 1919.
Peck, Morton E., 244 N. 12th St., Salem, Ore. 1909.
Pemberton, J. R., 729 Kennedy Bldg., Tulsa, Okla. 1900.
Pennock, Chas. J., Acad. Nat. Science, Philadelphia, Pa. 1909.
Peyton, Lawrence, R.D. 2, Fillmore. 1909.
Peyton, Sidney B., Sespe. 1913.
Phelps, Frank M., 212 E. 4th St., Elyria, Ohio. 1912.

*Philipp, Philip Bernard, 220 Broadway, New York, N. Y. 1911.
Phillips, C. L., 5 W. Weir St., Taunton, Mass. 1915.
Phillips, John C., Knobfields, Wenham, Mass. 1911.
*Pierce, Wright M., Box 116, Claremont. 1902.
Pierpont, Philip, Nordhoff. 1913.
Pilsbury, Frank O., 1088 Main St., Walpole, Mass. 1911.
Pitcher, Mrs. E. C., R.D. I, Box 159, Haywards. 1920.
Pleasants, Mrs. J. E., R.D. 3, Orange. 1900.
Powell, Miss Helen, 2703 Dwight Way, Berkeley. 1914.
Powell, R. A., 1459 Van Ness Ave., Fresno. 1920.
Pratt, Helen S., 245 W. Ridgway, Eagle Rock. 1920.
Price, A. E., Grant Park, Ill. 1905.
Price, Mrs. Ernest B., 108 Bonita Ave., Piedmont. 1920.
Pringle, Miss Cornelia Covington, 1705 Gough St., San Francisco. 1915.
Purington, Mrs. C. A., 28 Hermosa Ave., Long Beach. 1915.
Raker, Mary E., 1484 E. Sherman St., Portland, Ore. 1919.
Randolph, Miss Flora A., 2962 Derby St., Berkeley. 1907.
Rankin, Edward P., Bureau of Fisheries, Washington, D. C. 1913.
Rathbun, S. F., 305 Marion Bldg., Seattle, Wash. 1904.
Rawson, Charles I., Oxford, Mass. 1918.
Ray, Milton S., 29 Spear St., San Francisco. 1899.
Reis, C. Oscar, 646 Juanita Ave., Los Angeles. 1917.
Reynolds, L. R., 11 Ellsworth Ave., Brockton, Mass. 1913.
Reynolds, Nephi, Wn. Arms and Sp't'g Goods Co., Salt Lake City, Utah. 1919.
Rich, Dr. Guy C., 1820 El Cerrito Place, Hollywood. 1911.
Rich, Selwyn, Box 55, Claremont. 1919.
Rich, Waldo L., Saratoga Springs, N. Y. 1919.
Richards, E. B., 128 Chester St., Grass Valley. 1909.
Richards, Dr. T. W., Naval Hospital, Annapolis, Md. 1908.
Richards, W. W., 1512 Broadway, Oakland. 1915.
Richardson, W. D., 4215 Prairie Ave., Chicago, Ill. 1918.
Richey, J. Howard, 246 Linden Ave., Long Beach. 1914.
Richmond, Dr. Chas. W., U. S. Nat. Museum, Washington, D. C. 1904.
Richmond, Frank, care Richmond Bros., El Centro. 1920.
Riley, J. H., U. S. Nat. Museum, Washington, D. C. 1909.
Rittenhouse, Prof. Samuel, Univ. S. Cal., Los Angeles. 1916.
Ritter, Prof. W. E., LaJolla. 1901.
Roberts, Dr. T. S., Animal Biol. Bldg., Univ. Minn., Minneapolis, Minn. 1909.
Robertson, Howard, 157 Wilton Drive, Los Angeles. 1896.
Robertson, John McB., R.D. 1, Box 13, Buena Park, Orange Co. 1913.
Roe, Mrs. E. D., 744 Guerro St., San Francisco. 1919.
Ross, Ronald C., 1921 Kirkwood Ave., Pasadena. 1920.
Rowley, J., 42 Plaza Drive, Berkeley. 1909.
Rush, Lora Gertrude, 1607 Walnut St., Berkeley. 1920.
Rust, Henry J., Box 683, Coeur d'Alene, Idaho. 1911.
Sage, Jno H., Portland, Conn. 1910.
Sampson, W. B., 1005 N. San Joaquin St., Stockton. 1894.
Sanford, Dr. Leonard C., 347 Temple St., New Haven, Conn. 1915.
Sanford, W. H., 919 W. Acacia St., Stockton. 1915.
Saunders, Aretas A., 48 Longview Ave., Fairfield, Conn. 1909.
Saunders, W. E., London, Ont., Canada. 1910.
Saville, Miss Elsie M., 403 E. 8th St., Topeka, Kan. 1920.
Schaefer, Oscar F., 669 Genesee St., Rochester, N. Y. 1917.
Schleichert, Ernest K., Mathias Point, Va. 1919.
Schlesinger, Mrs. Jane L., 1417 Filbert St., Oakland. 1915.
Schneider, Fred A., 646 Emory St., San Jose. 1901.
Schneider, J. J., Box 363, Anaheim. 1899.
Schussler, Geo. W., 1345 Oak St., San Francisco. 1911.
Sclater, William Lutley, 10 Sloane Court, London, S. W., England. 1909.
Scott, Carroll DeW., 1620 7th St., San Diego. 1915.
Sellmer, Walter B., 425 New Call Bldg., San Francisco. 1919.
Sharp, Clarence S., Escondido. 1902.
Sharples, Robert P., West Chester, Pa. 1911.
Shaw, W. T., 1000 Thatuna St., Pullman, Wash. 1911.

Shelton, Alfred C., Johnston-Shelton Co., Dayton, Ohio. 1909.
Shepard, John Alden, 437 3d Ave., Salt Lake City, Utah. 1919.
*Sherman, Althea R., National, via McGregor, Iowa. 1911.
Shiras, George, 3d, Stoneleigh Court, Washington, D. C. 1914.
Silliman, Edmund, Alisal and Ryker Sts., Salinas. 1918.
Silliman, O. P., 220 Salinas St., Salinas. 1913.
Simmons, George F., Univ. Texas, Austin, Texas. 1913.
Sismey, E. D., Box 222, Penticton, B. C., Canada. 1919.
*Skinner, M. P., Yellowstone Park, Wyo. 1915.
Sloanaker, Jos. L., 1105 Spofford Ave., Spokane, Wash. 1910.
Smith, Allyn G., Box 125, Redlands. 1909.
Smith, Austin Paul, care American Consul, San Jose, Costa Rica. 1907.
Smith, A. Russell, Mt. Carmel Ave., North Glenside, Penn. 1919.
Smith, C. R., 563 42d Ave., San Francisco. 1917.
Smith, Prof. Frank, 1005 W. California Ave., Urbana, Ill. 1911.
Smith, Franklin J., Box 98, Eureka. 1913.
Smith, Horace G., 2918 Lafayette St., Denver, Colo. 1914.
Smith, L. E., Box 115, Sisson. 1919.
Smyth, W. H., Fernwald, head of Dwight Way, Berkeley. 1918.
Smyth, Mrs. W. H., Fernwald, head of Dwight Way, Berkeley. 1918.
Snyder, Prof. J. O., Box 775, Stanford University. 1900.
Spaulding, M. Herrick, Agr. Coll., Bozeman, Mont. 1918.
Stafford, Walter A., 31 Park Way, Piedmont. 1917.
Steinbeck, William, 1029 N. Hunter St., Stockton. 1897.
Steinmetz, Frank J., 1021 Ramona St., Palo Alto. 1917.
Stephens, T. C., Morningside College, Sioux City, Iowa. 1914.
Stevens, Dr. J. F., 304 Funke Bldg., Lincoln, Neb. 1911.
Stewart, Ronald M., Comox, B. C., Canada. 1920.
Still, Donald, 735 E. 8th St., Tucson, Ariz. 1918.
Stivers, Dr. C. G., 502 Auditorium Bldg., Los Angeles. 1914.
Stoddard, H. L., Field Museum Nat. Hist., Chicago, Ill. 1914.
Stone, D. D., R.D. 3, Oswego, N. Y. 1909.
Stone, Geo. E., 1725 Le Roy Ave., Berkeley. 1912.
Stoner, Emerson A., Box 444, Benicia. 1918.
Storer, Miss Mary S., 467 San Pablo Ave., Fresno. 1914.
Storer, Tracy I., Museum Vert. Zool., Berkeley. 1910.
Stormont, W. P., 219 W. Ave. 51, Los Angeles. 1917.
Stout, Gardner D., 129 E. 55th St., New York, N. Y. 1918.
Streator, Clark P., 16 Mason St., Santa Cruz. 1919.
*Strong, W. A., 41 Grand Ave., San Jose. 1912.
Stuart, Geo. H., 3d, N. W. cor. Broad & Chestnut Sts., Philadelphia, Pa. 1913.
Sugden, J. W., 47 S. 8th W. St., Salt Lake City, Utah. 1915.
Swales, B. H., U. S. Nat. Museum, Washington, D. C. 1906.
Swarth, Harry S., Museum Vert. Zool., Berkeley. 1897.
Sweeney, Joseph A., U. S. Forest Service, Nenzel, Neb. 1912.
Swenk, Prof. Myron Harmon, 1410 N. 37th St., Lincoln, Neb. 1916.
Swezy, Dr. Olive, Zool. Dept., Univ. Cal., Berkeley. 1914.
Tallman George, Box 12, Chatsworth Park. 1915.
Tanner, V. M., Mt. Pleasant, Utah. 1919.
Taverner, P. A., Zool. Div., Geol. Survey, Ottawa, Ont., Canada. 1909.
Taylor, E. F., Grass Valley, Nevada Co. 1910.
Taylor, Jesse H., 210 Myrtle Ave., Eagle Rock. 1919.
Taylor, L. E., R.D. 2, Reno, Nev. 1897.
Taylor, Dr. Walter P., 1428 Perry Place, N. W., Washington, D. C. 1905.
Terrill, L. McI., 44 Stanley Ave., St. Lambert, Que., Canada. 1911.
Test, Dr. Louis A., 629 Russell St., Lafayette, Ind. 1908.
*Thayer, John E., Box 98, Lancaster, Mass. 1906.
Thompson, J. Walcott, 527 E. 1st South St., Salt Lake City, Utah. 1918.
Thompson, Thos E., 5035 Stratford Road. Los Angeles. 1919.
Thomson, Miss Isabel A., 5939 Shafter Ave., Oakland. 1918.
Thowless, Herbert L., 765 Broad St., Newark, N. J. 1919.
Todd, W. E. Clyde, Carnegie Museum, Pittsburg, Pa. 1909.
Tonkin, George, Biol. Survey, Boise, Idaho. 1920.

Treganza, A. O., 610 Utah Svgs. & Trust Bldg., Salt Lake City, Utah. 1907.
Treganza, Mrs. A. O., Lemon Grove. 1915.
Trenor, T., Box 2, Sta C., Los Angeles. 1913.
Trescot, E. B., R.D. 4, Box 221, Petaluma. 1915.
Trippe, Thomas M., Howardsville, Colo. 1911.
Trumbull, J. H., 39 Farmington Ave., Plainville, Conn. 1911.
*Tyler, John G., P. O. Box 445, Turlock. 1905.
Tyler, Dr. Winsor M., 522 Massachusetts Ave., Lexington, Mass. 1914.
Ufford, Elmer, Oberlin, Kan. 1917.
Unglish, W. E., Gilroy. 1910.
Van Denburgh, Dr. John, 240 Stockton St., San Francisco. 1916.
Van Dyke, Mary Ames, 1545 Le Roy Ave., Berkeley. 1920.
Van Fleet, Clark C., Box 468, Santa Rosa. 1906.
Van Rossem, Adriaan, 3459 S. Arlington St., Los Angeles. 1909.
*Van Straaten, H., Nederlandsche Handel, Maatschappy, Amsterdam, Holland. 1918.
Vorhies, Chas. T., Univ. Ariz., Tucson, Ariz. 1916.
Walker, Alex., Hemlock, Ore. 1911.
Walker, Ernest P., 1312 E. Filmore St., Phoenix, Ariz. 1910.
Walker, G. Raymond, R.D. 3, Murry, Utah. 1919.
Wall, Edward, Box 554, San Bernardino. 1913.
Warburton, Stanton, Jr., 311 Fidelity Bldg., Tacoma, Wash. 1917.
Ward, F. H., 18 Grove Place, Rochester, N. Y. 1915.
Warmer, Charles A., 1310 Baker-Detwiler Bldg., Los Angeles. 1920.
Warren, E. R., 1511 Wood Ave., Colorado Springs, Colo. 1909.
Wear, Miss Winifred N., 253 Coast Ave., Fresno. 1909.
Weber, J. A., Moore and Grand Aves., Leonia, N. J. 1915.
Webster, Mrs. Jennie E. B., Univ. Soc., 44 E. 23d St., New York, N. Y. 1918.
Welch, L W., 1845 Olive Ave., Long Beach. 1911.
Wells, Gurnie, 913 4th St., Santa Rosa. 1911.
Welsh, Joseph, Pasadena Hdw. Co., Pasadena. 1917.
Westerfeld, Dr. Otto, 240 Stockton St., San Francisco. 1915.
Wetmore, Alexander, Biol. Survey, Washington, D. C. 1909.
Whalen, Mrs. Etta L., Box 640, Tulsa, Okla. 1914.
Wheeler, Harry Edgar, Fayetteville, Ark. 1919.
Wheeler, Mrs. J. W., 403 15th Ave. N., Seattle, Wash. 1912.
Wheeler, Roswell S., 166 Athol Ave., Oakland. 1894.
White, Halsted G., Museum Vert. Zool. Berkeley. 1914.
Whitney, Miss Margaret W., 1563 N. Raymond Ave., Pasadena. 1919.
Widmann, O., 5105 Enright Ave., St. Louis, Mo. 1904.
Wiggins, Dr. C. G., 1191 N. 9th St., Colton. 1916.
Wilder, H. E., Carlotta, Humboldt Co. 1909.
Willard, B. G., 1619 Massachusetts Ave., Cambridge, Mass. 1910.
Willard F. C., Farmingdale, Long Island, N. Y. 1905.
Willett, Geo., Craig, Alaska. 1905.
Williams, John, R.D. 9, Iowa City, Iowa. 1918.
Williams, R. F., 218 Inwood Ave., Upper Montclair, N. J. 1919.
Williams, Robert W., Tallahassee, Fla. 1914.
Wilson, J. Frank, 512 E. Lemon St., Monrovia. 1915.
Wood, Dr. Casey A., The Kingscote, Stanford University. 1916.
Wood, Jesse J., 314 W. Mitcheltoreno St., Santa Barbara. 1912.
Wood, Norman A., Museum Zool., Ann Arbor, Mich. 1916.
Woodruff, Frank M., Chicago Acad. Sciences, Chicago, Ill. 1906.
Woods, Robert S., 919 S. Bonnie Brae, Los Angeles. 1920.
Wright, Curtis, Jr., 81 Hillcrest, Berkeley. 1916.
Wright, Frank S., 14 Cayuga St., Auburn, N. Y. 1910.
Wueste, Rudolph, Lower Otay Dam, Bonita. 1901.
Wyman, L. E., Museum Hist., Sci., and Art, Los Angeles. 1908.
Wythe, Margaret W., Museum Vert. Zool., Berkeley. 1912.
Young, Pauline Rodgers, Canille, Santa Cruz Co., Ariz. 1918.
Zahn, Otto J., 2115 Estrella Ave., Los Angeles. 1896.
Zech, Miss Lillian, 335 W. Highland Ave., Redlands. 1916.
Zerlang, John, Samoa, Humboldt Co. 1918.
Zerlang, Lawrence, 524 W. Hawthorne St., Eureka. 1918.

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THE CONDOR

A Magazine of Western Ornithology

Volume XXII July-August, 1920 Number 4

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THE CONDOR

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[Issued August 10, 1920]

AUG 21 1920
National Museum

IN MEMORIAM: FRANK SLATER DAGGETT

By H. S. SWARTH

WITH PORTRAIT

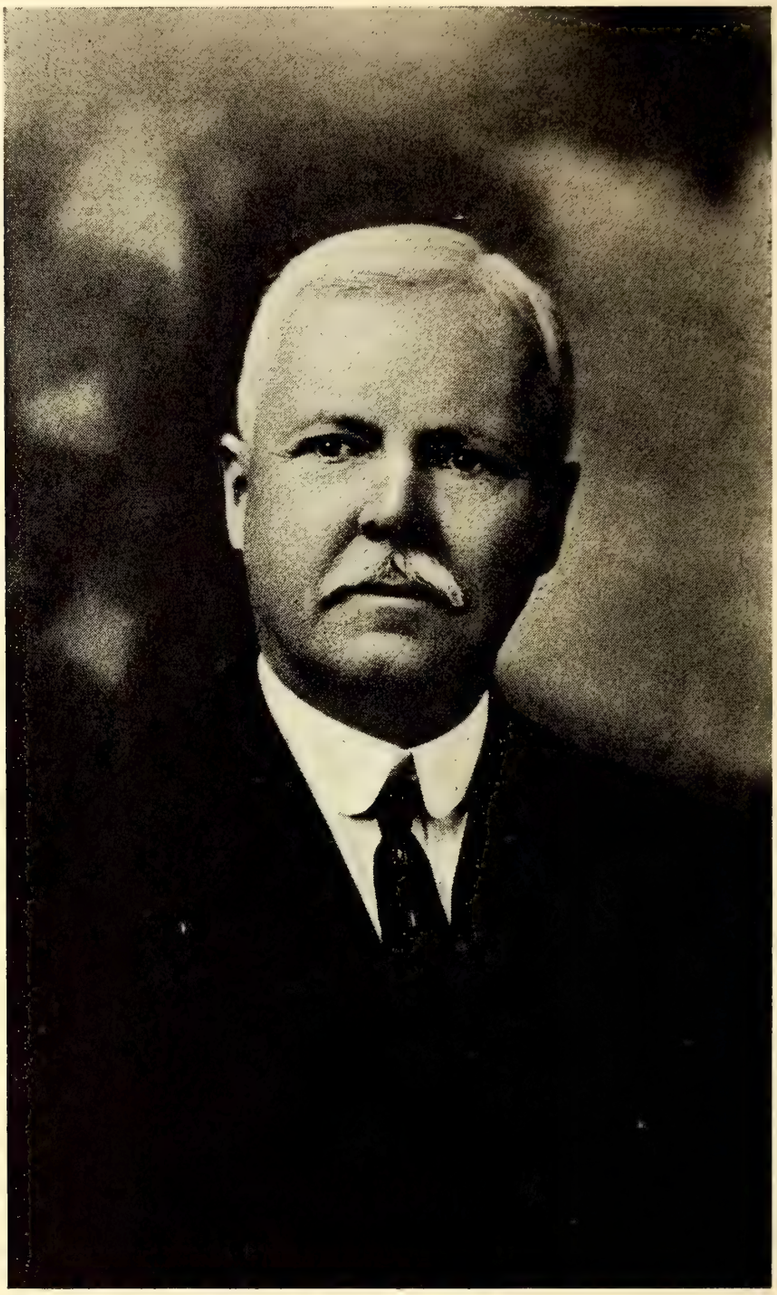
IN THE DEATH of Frank Slater Daggett the Cooper Club has lost an active and energetic member, who for many years had taken a prominent part in the affairs of the Club. His end came April 5, 1920, at Redlands, California, suddenly and without warning, due to a cerebral hemorrhage.

Mr. Daggett was born at Norwalk, Ohio, January 30, 1855. His early manhood was spent at Milwaukee, Wisconsin; on June 5, 1884, at Augusta, Wisconsin, he was married to Lela Axtell. They had one daughter, Ethel Elizabeth, and one son, Axtell, the latter of whom died in his childhood. In 1885 the family moved to Duluth, Minnesota, where Mr. Daggett was engaged in the grain business. While there he was a member of the school board, upon which he was chairman of the finance committee, and he took an active part in the construction of a new high school, which, at the time, was said to be the second finest in the United States. He became greatly interested in photography, by no means as easy for the amateur then as it has since been made, and he owned the first camera to be brought into Duluth.

He was a born collector, and his love for nature and the out-doors turned this bent toward the acquisition of specimens of various forms of animal life. First, in boyhood, a collection of butterflies was begun. Later on, this field was extended to include other insects, and, still later, birds. While at Duluth he made summer trips each year into the Nipigon region, Canada, fishing and collecting, with no company but his Indian guides.

The winter of 1892-93 he and his family spent in Pasadena. The next winter (1893-94) found them at Orlando, Florida. At the latter place Mr. Daggett did a great deal of collecting, many of his specimens going to the Duluth High School. In 1894 the family moved to Pasadena to stay. Just at that time there were a number of individuals in Pasadena and Los Angeles, all interested in birds and gradually getting acquainted with one another, to form the coterie of bird lovers that later developed into the Southern Division of the Cooper Ornithological Club. Mostly these were much younger men than Mr. Daggett,

some of them mere boys, in fact, but he found their company congenial—at least in this one phase of their lives—and there is no doubt but that his companionship meant a great deal to these younger associates. With these sympathetic acquaintances, and under other favoring circumstances, he did much ornithological work at this period of his life, and amassed a large collection of southern California birds.



Frank D. Daggett

In 1889 Mr. Daggett became an Associate Member of the American Ornithologists' Union; he was among the first to be advanced to the newly established class of Members, in 1901. Membership in the Cooper Club dates from September 30, 1895. He served as vice-president of the Southern Division during the years 1898, 1899 and 1900, and as president in 1901, 1902, 1903.

At that time the Southern Division held most of its meetings at the residences of various of the members, and a meeting at the Daggett home was always sure to be largely attended. For several consecutive years the "annual meetings" (in December) were held there, and those privileged to be present look back upon those occasions as among the most pleasurable of their Club experiences. The "outing meetings", too, formed a feature of the Southern Division that was a source of much enjoyment to those participating, and Mr. Daggett was always active in the organization and carrying out of these three-day picnics. In 1899, an impending storm deterred most of those who had intended to join in the climb up Mount Wilson, as had been planned, and Mr. Daggett was the only member who showed up. He, with his family and some friends who accompanied them, carried out the "meeting", however, and, later, in a communication to the "Bulletin of the Cooper Ornithological Club" (1899, pp. 119-120), he poked a little good-natured fun at those who failed to appear. His published account of the outing meeting for 1903 gives a very good idea of the nature of these out-door gatherings (1904, pp. 22-23).

In 1904, Mr. Daggett left Pasadena for Chicago, to engage once more in the grain business, on the Board of Trade. His days then, were, of course, extremely busy ones, but he still found rest and relaxation in ornithology, and spent much of his spare time in collecting specimens of small birds in the environs of the city. Not always small birds either, for the present writer, calling at his home one evening, was shown a Whistling Swan that had occupied many hours before the preparation of that greasy specimen was accomplished. The bird had been killed by a hunter near Waukegan, and Mr. Daggett, hearing of the occurrence through some lucky chance the same day, promptly went after the bird and secured it.

In 1910 this period of residence in Chicago ended, and he returned again to southern California. During that year the county of Los Angeles had erected a building in Exposition Park to house the new Museum of History, Science and Art, an institution in which the Cooper Club is interested to the extent of having representation upon the Board of Governors. The building was finished but unoccupied, it contained no exhibits, and as yet no staff appointments had been made. It was a happy circumstance that brought Mr. Daggett to Los Angeles at that time, and it was most fortunate for the young institution that he was induced to accept the directorship, which he did early in 1911. He was a man of marked business ability, well able to assume executive control, this combined with the acquisitive instincts of a collector, the realization of the scientific needs and responsibilities of such an institution, and an artistic sense that was to stand him in good stead in the development of exhibits. Mr. Daggett's acceptance of the directorship entailed a considerable financial sacrifice upon his part. That he took the position was purely through his love for the work; there is no doubt of the intense enjoyment he derived from the building up of the institution and the exhibits it contained. Mr. Daggett remained Director of the Museum of History, Science and Art, to the time of his death. His end came during a brief week-end interval of relaxation, in the midst of the activities of his position.

While the Museum of History, Science and Art covers a wide range of subjects, as indicated by its title, the notable feature of the institution is its collection of fossil animals from Rancho La Brea. It is hard to see how these peculiar fossils could have been better handled, both in the manner of removal and

cleaning, and in the systems of recording and storage. Those selected for exhibition, too, were treated in a way that to the present writer seems well-nigh beyond criticism, considering the unavoidable limitations of exhibition space. Credit for much of the details of this excellent work belongs, of course, to certain of Mr. Daggett's assistants, those in immediate charge of the work, but it was due to the persistent efforts of the Director himself that means became available to enable the collections and exhibits to be handled properly, and as he wished them to be. It is also due to his inflexible attitude in the matter that this priceless accumulation of fossils was kept intact, that invaluable series of specimens ("duplicates", so-called) were not broken up and scattered, in exchange for miscellaneous objects of doubtful value to the institution.

In 1918, Occidental College bestowed upon Mr. Daggett the honorary degree of Doctor of Science, in appreciation of his work at Rancho La Brea. While he did not himself publish anything relating to this deposit, he was untiring in his care that the material should be available for those who were studying it, and that it should be preserved as they would have it done; it was fitting that his services in these regards should be recognized as they were by a university situated in the community where he was employed. His co-operation with those actively engaged in the study of these fossils has been further recognized by the naming of certain species in his honor. *Morphnus daggetti*, a peculiar, long-legged eagle of the Rancho La Brea deposit, was so designated by L. H. Miller in The Condor (vol. 17, 1915, pp. 179-181). A puma, *Felis daggetti*, was described by J. C. Merriam (Univ. Calif. Publ. Geol., vol. 10, 1918, pp. 535-537), with the statement that: "This species is named in honor of my friend and colleague, Mr. Frank S. Daggett, Director of the Museum of History, Science and Art, of Los Angeles, whose interest and co-operation in study of the Rancho La Brea collections have contributed largely to the effectiveness of monographic studies on this fauna now in progress."

That Mr. Daggett's work along the lines of ornithology and entomology was mainly as a collector was probably because both studies were followed as a relaxation, a change from the business pursuits with which his days were mostly occupied. His knowledge of both subjects was accurate and comprehensive, but he published little of a technical nature. It is to be noted in his ornithological bibliography that a large proportion of the writings are of the nature of suggestions or criticism, and they are of a character that bespeaks a high degree of acumen and foresight. His communication on the "Importance of Accuracy in Lists" (1899, p. 115) is an expression of deeply felt convictions, and a little later his review of Jones and Dawson's "A Summer Reconnoissance in the West " (1901, pp. 53-54) is a re-iteration of the same theme. There is no doubt that Mr. Daggett's repeated insistence on the need of care and accuracy in ornithological work had a marked effect, and a very wholesome one, upon his younger associates, who were at that time "discovering" many novelties.

His communication "Concerning the Active Membership of the A. O. U." (1900, pp. 68-69), was not a criticism of carping and pointless character, such as had been directed toward that organization from other quarters, but a reasonable presentation of facts, suggesting desirable changes and in a manner free from offense. It is noteworthy that the publication of these views foreshadowed the radical changes made in the by-laws of the American Ornitholo-

gists' Union a year or so later. Mr. Daggett's "Suggestion for forming Club chapters" (1901, p. 109) outlined a scheme that was later adopted by the Cooper Club, and very successfully. Another published letter of his (1911, p. 78) urging expansion of the A. O. U. *Check-List* to include all of North America south to the Isthmus of Panama, we may assume to be again a correct insight into the trend of future events.

There has been one bird subspecies named for Mr. Daggett, *Sphyrapicus varius daggetti*, described by Grinnell (Condor, vol. 3, 1901, p. 12). Grinnell and Daggett, in collaboration, described the song sparrow of Coronados Islands, *Melospiza coronatorum* (Auk, vol. 20, 1903, p. 34).

Mr. Daggett was ingenious and resourceful. His ingenuity found expression in such things as the modifications he introduced into the accepted mode of preparing bird skins, in the types of cases he manufactured for the storage of his specimens, and in many details in the installation of exhibits during the first year or two of the Museum of History, Science and Art, when there was much to be done with but little help. His resourcefulness in dealing with people was a trait that was of great value in his Museum work, too, for with a governing board composed of nine individuals, and with a county board of supervisors in addition to be considered, there were bound to be clashing interests that could not be reconciled. It speaks well of the Director of the Museum that he could have pursued his course and, in the main, attained his objects, and still retain the approbation and support of men whose ideas he often felt compelled to oppose.

The writer recalls resourcefulness of another sort in an incident, the outcome of which caused Mr. Daggett the keenest satisfaction. A blackguardly sheriff's officer of some sort, working in connivance with a corrupt justice of the peace (a combination of a kind that at that period flourished in Chicago), arrested him and a companion on the charge of breaking the law in shooting birds near one of the villages along the drainage canal, southwest of the city. Bail was placed at twenty dollars each, and the trial set some days ahead, the assumption being, of course, that men of such obviously prosperous appearance as the two prisoners would not appear at the time, forfeiting their bail as the simplest way out of the difficulty. This, however, did not appeal to Mr. Daggett in the least, and he was unkind enough to return to the city at once and institute certain inquiries. The result of his discoveries was that the next morning the officer who arrested him was himself in the county jail, on charge of running a "blind pig", and before the day was over he was, in a rather dazed state of mind, beginning to serve a jail sentence for the offense. At the time set for Mr. Daggett's trial, he and his companion appeared, serene and untroubled, before a judge who was obviously disturbed, though unable to say much; the complaining witness was not on hand. The bail money was returned, with what grace the court could muster, and the incident was closed—for all but the luckless individual who had started the trouble.

Mr. Daggett's collection of bird skins numbered 8009 specimens at the time of his death. His collection of Coleoptera was also a large one. A large proportion, both of birds and beetles, was collected by himself, notably from Wisconsin, Minnesota, Florida and southern California. He had besides a quantity of material, both ornithological and entomological, from Arizona. Bird skins were prepared by a method of his own devising, and his specimens

were of excellent appearance and remarkably durable in construction. Both birds and beetles were housed in cases that he himself planned and built, cases that excellently served his purpose and that were neat and pleasing in appearance.

Regarding his entomological work, the following information has been received from Prof. H. C. Fall, the accomplished coleopterist: "Mr. Daggett was an enthusiastic and observing collector, but his contributions to entomological literature are, so far as I know, confined to two or three half-page notes and two short articles (two or three pages each) on collecting experiences around Duluth and in the wilderness to the north of that city. His observations are about equally divided among butterflies, grasshoppers and beetles. I think all the articles were published in 'Entomological News', 1892-1895. . . . I once named an *Acmaeodera* in his honor. I do not know of any other species named for him, but there might be, outside the limits of the Coleoptera. His beetle collection probably numbered 2000 species, taken mostly around Duluth and in California."

Next to the collections of birds and insects, his library commanded his interest and attention. It includes, besides his careful selection of bound volumes, a collection of unbound separata that grew to such size as to be fairly crowded out of his home and necessarily removed to a room in the Museum.

During the years he spent in Chicago, Mr. Daggett was a familiar figure in the second-hand book stores of the city. Any leisure time on his way to or from his office was apt to be spent in these places, and many were the treasures he unearthed. An especially curious find made at that time, a unique copy of Petiver's "Gazophylacium Naturae et Artis" (London, 1702-1709) is described by him in the Auk (1907, pp. 448-449).

The appended bibliography contains such of Mr. Daggett's writings, outside of entomology, as the present author has been able to find, but it may well be that some items are overlooked.

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Berkeley, California, May 27, 1920.

VARIATIONS IN THE SONG OF THE GOLDEN-CROWNED SPARROW

By FRANK N. BASSETT

WITH FOUR FIGURES

ABOUT THREE years ago my attention was called to the song of the Golden-crowned Sparrow (*Zonotrichia coronata*) as recorded by Keeler (Bird Notes Afield, 1899, p. 117), and the remark passed at that time expressed some doubt as to the accuracy of this record. I thereupon determined to give particular attention to the song of this bird with the chance of hearing it as written in the work mentioned. I provided myself with a pitch pipe tuned to the international orchestral pitch (440A), and with the aid of this have set the songs in musical notation in the exact pitch as performed. During this time I discovered numerous variations to the song, but had about given up hopes of hearing it as written by Keeler when on April 4, 1920, to my great surprise I heard it, and moreover in exactly the same pitch as he has written it.

There seems to be one song which is typical of the species, but occasionally it is transposed into other keys, and less frequently there are variations in it. Following is the song with its variations in the order of their frequence.
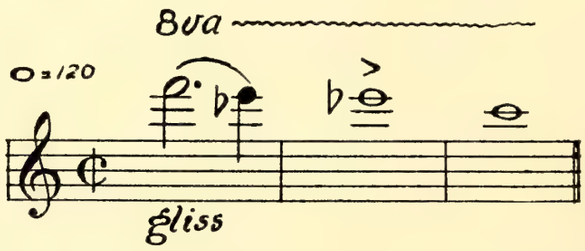
Fig. 29

This is far the most frequently heard song, outnumbering all the variations together. It begins on F and with a gradual slur amounting to a *glissando* it descends one tone to E flat where there is a slight break and the E flat is struck again with a decided accent, passing a minor third lower to C without any special marks of expression. This last interval naturally pitches the song in C minor, and I have frequently heard it one half tone higher (C sharp minor), and one half tone lower (B minor). Occasionally it has been sung one tone higher (D minor), and rarely one tone lower (B flat minor), making in all five different keys in which I have heard this song.
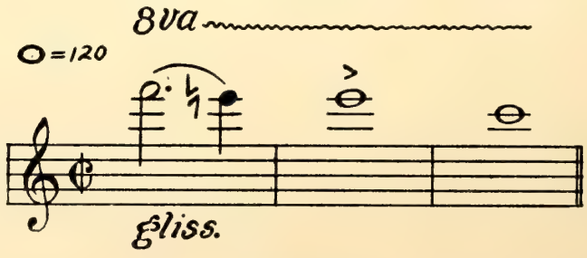
Fig. 30

This is the most frequent variation. It is precisely the same as the first song except the first note descends only one half tone to E natural and thence

to C, making the last interval a major third and establishing the key of C major. Like the first, this has been heard in five different keys ranging from one tone lower to one tone higher.
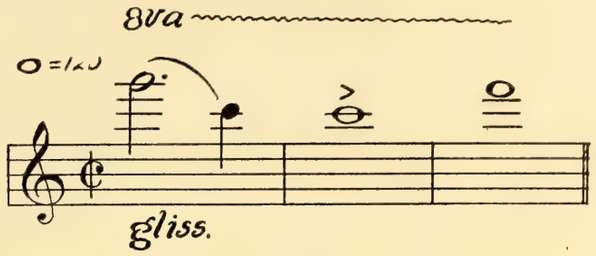
Fig. 31

This is less frequently heard than the former. I did not determine the exact pitch of this song but it seems probable that on account of the great interval between the first and second notes it should be pitched as here written or perhaps a half tone or a tone lower, but no higher, for this would employ a higher note than I have ever heard the bird sing.
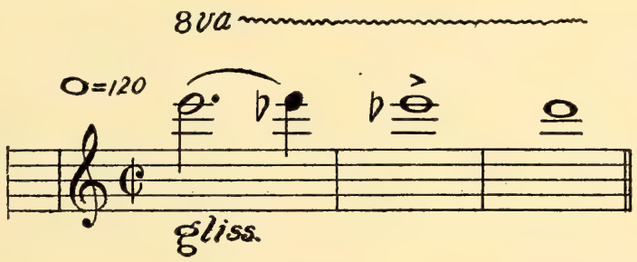
Fig. 32

This song I have heard only once. It is the one written by Keeler as mentioned previously.

The *tempo* is the same for all songs, about 120 whole notes to the minute, although this may vary somewhat. The quality of tone is that of harmonics on the violin.

There are other variations which cannot be set down in musical notation. At times the last note (C) of the typical song will be too high for C and not high enough for C sharp, producing the rather unpleasant effect of being out of tune. The same occasionally happens to the second measure of the song, and it applies to the variations as well.

The Golden-crowned Sparrow is not usually considered among our finest songsters and perhaps with some degree of justice, for it would seem like slandering the thrushes to place him among them. But on the other hand, the simplicity of this song should not go unappreciated any more than we forget Hayden or Mozart just because we have Wagner, Strauss, and Debussy. The greatest technician is not always the greatest artist, and this song, simple, yet sublime, is delivered by a true musician. The modesty and righteousness of the true interpretive artist underlie the spirit of this bird's performance, and the elaborate songs of his more showy contemporaries in nowise diminish his glory. He is at least a true artist if not a great virtuoso.

Alameda, California, April 14, 1920.

ADDITIONAL NOTES ON THE AVIFAUNA OF FORRESTER ISLAND, ALASKA

By GEORGE WILLETT

THE WRITER, who had previously spent the summers of 1914-15-16-17 on Forrester Island, off the coast of southeastern Alaska, returned to that locality during 1919, and, though engaged in fishing the greater part of the summer, found time to make a few notes that may add somewhat to our knowledge of the avifauna of this island. (For previous publications on this locality see Heath, Condor, XVII, 1915, pp. 20-41; Willett, Auk, XXXII, 1915, pp. 295-305; Condor, XIX, 1917, pp. 15-17; Condor, XX, 1918, p. 85.) Three species are here added to the number known to occur on or in the immediate vicinity of the island, *Puffinus tenuirostris*, *Mergus americanus* and *Hylocichla guttata nanus*.

The occurrence of the Slender-billed Shearwater (*Puffinus tenuirostris*) was ascertained in 1917, but through an oversight was omitted from the published notes of that year. During the first two or three summers spent on the island the writer had several times seen a dark-colored shearwater that appeared to be smaller than *P. griseus*, which latter bird is irregularly common (often abundant), generally during the latter part of the summer. However, realizing the ease with which errors may be made by relying on size alone in a sight record of this kind, no mention of the matter was made in previous articles. On June 21, 1917, while two or three hundred yards off the northern end of the island, a specimen of *Puffinus tenuirostris* was found dead, floating on the water. It was in fair condition, was preserved, and is now in the writer's collection. I am still in doubt as to what proportion of the shearwaters of the locality are referable to this species. During 1919, for some reason not apparent to the writer, shearwaters were much less plentiful than usual, only being seen occasionally and then in small numbers.

Mergus americanus. American Merganser. Two adult male birds of this species were seen at close range off Lowrie Island, at the north end of Forrester Island, on the afternoon of June 12, 1919. They were undoubtedly present only as stragglers.

Hylocichla guttata nanus. Dwarf Hermit Thrush. The writer is forced to admit that his lack of careful observation is probably responsible for the fact that this species has not been previously recorded as summering on the island. A number of thrushes' nests found in previous years were all unquestionably those of *Hylocichla ustulata ustulata;* and, probably more from this fact than any other, the conclusion was arrived at that *ustulata* was the only thrush, exclusive of *Ixoreus*, that was nesting on the island. The first circumstance that tended to prove this conclusion an erroneous one was the finding of a specimen of *H. g. nanus* lying dead near my cabin, May 4, 1919. On dissection this bird proved to be a male and near breeding. After this, particular attention was paid to the thrushes with the result that *nanus* was found to be present in some numbers—probably as plentiful as *ustulata*—during the entire summer. The nest must be a difficult one to locate, as it was not found, though diligently sought for on several occasions. Full-grown young appeared in the vicinity of camp early in July and by the 18th of that month they were quite common. It does not seem plausible that these facts apply solely to the summer of 1919, and it is

the writer's belief that this species is a regular breeding bird in the locality, not having been previously recorded as such, by reason of the fact that it has been confused with its relative, *H. u. ustulata.*

During 1919 most of the breeding birds of the locality were present in the usual numbers and nesting as has been previously described. A considerable proportion (probably at least half) of the Pelagic Cormorants present at the island apparently failed to nest this summer, and three eggs was the complement of most of those that did nest. This irregularity of the species in nesting has been frequently observed by the writer during past seasons, but whether it is caused by fluctuation of food supply or other reasons is still unknown to him. There was apparently as much food for the cormorants this year as during 1917, when all the birds appeared to breed, with four eggs the smallest number observed in a nest and five eggs not unusual.

One nest of the Pigeon Guillemot containing two eggs was found June 12, the first time the writer has noted this number on the island. While this is the usual nest complement along the California coast, none of the nests previously noted by the writer on Forrester Island (probably a dozen or more), contained more than one egg or young.

Seven nests of the Townsend Sparrow (*Passerella iliaca townsendi*) were observed on various dates between May 26 and July 5. As usual, the situations of these nests varied greatly, two being well up in trees, two on the ground, and the others among moss and grass on sides of decayed stumps and fallen logs. Four out of these seven nests contained four eggs each, a number found very rarely during previous years, three being the usual complement.

Out of four Lutescent Warblers' nests noted, three contained five eggs each and the other four, a rather large average for sets of this bird.

Unusually rough weather during most of the early part of the month of May made travelling on the water very difficult or impossible, consequently few notes on the migratory water birds were obtained. Pacific Loons, though not so abundant as during some former springs, were frequently seen flying northward from May 2 to May 20, and one was noted as late as June 7. Several Sabine Gulls were observed outside the island June 8, the only time the species was seen during the summer. An immature Bonaparte Gull appeared in the bay July 26, the second record for the locality. Large flocks of Northern Phalaropes arrived June 12, and the species was rather common for several days thereafter.

Aleutian Savannah Sparrows (*Passerculus sandwichensis sandwichensis*) were common during the spring migration from May 6 to 20 and were seen in diminished numbers until May 26. Golden-crowned Sparrows were unusually plentiful from May 8 to 19, and White-winged Crossbills were noted on two occasions, on May 15, when several large flocks were seen at the south end of the island, and May 24, when a flock of half a dozen birds appeared at camp. Sitka Crossbills were more or less plentiful during the entire summer, but no indication of their breeding was noted.

Marbled Murrelets with full-grown young appeared July 31 and were common at the time of our departure from the island, August 8.

Craig, Alaska, November 15, 1919.

OBSERVATIONS ON THE HABITS OF THE WHITE-WINGED DOVE

By ALEXANDER WETMORE

THE OBSERVATIONS on which the following notes on the habits of the White-winged Dove (*Melopelia asiatica mearnsi* Ridgway) are based were made in the main along the Gila River in Maricopa County, Arizona, near the small settlement of Arlington. Field work in this region was carried on continuously from June 3 to 17, 1919, in the interests of the Biological Survey, U. S. Department of Agriculture. The tract under irrigation from the Gila at Arlington is comparatively narrow and there are still extensive growths of mesquite and other similar shrubs in the lowlands that as yet have not been cleared away. Small groves of cottonwoods and willows border the river, and there are extensive alkaline areas adjoining them where the ground may be marshy or swampy in character. On either side is the desert where mesquites and palo verdes grow in the dry washes and the creosote bush covers the open flats. Chollas are abundant and the giant cactus is common. To the eastward near the settlements of Palo Verde and Buckeye the irrigated lands are broader in extent and the country is more thickly settled.

The interesting habits of the White-winged Dove have been described in considerable detail by Bendire (Life Histories of North American Birds, 1892, pp. 145-148) and by Gilman (Condor, 1911, pp. 52-54), while scattered notes have been published by others. It is believed that the present observations include facts that have been previously unknown, although there is much that still remains to be learned concerning this species.

The White-winged Dove is known familiarly to ranchers in this region as White-wing, Sonora Dove or Mexican Dove, the last two of these appellations arising from the migratory habit of these birds that was believed to carry them into Mexico. White-wings were reputed to come to Arlington between April 20 and May 1 each year, and to be present in full force by May 20. On my arrival in June I found them breeding in pairs scattered through the cultivated lands or the open desert, or congregated in large colonies in suitable mesquite *montes* near the Gila River. One or two pairs were found at intervals in cottonwoods beside roads or near ranch houses, but the greatest interest centered in the large congregations to be found in suitable tracts of mesquites. These rookeries were often of considerable extent. One located three and one-half miles south of Arlington extended over an area a quarter of a mile square, while another three miles beyond occupied a grove nearly half a mile wide and an equal distance in length. The birds maintained regular flights across country and gathered in flocks to feed, so that they were conspicuous figures in the bird life of the region. It was difficult to estimate the number present, as they were scattered about in dense groves of mesquites, but it was believed that there were at least two thousand pairs in the largest colony examined. The total number present in the area was large. It appeared that the period for breeding among these birds was somewhat irregular. A part of them evidently began to nest soon after their arrival, as a number that were feeding young were observed on June 6. Others were nest-building on June 17, so that the entire period of reproduction was somewhat prolonged. In the colonies nests were scattered about irregularly through the mesquites. Sometimes two or three nests were placed in the same tree, or again one

pair occupied a tree alone. There was no crowding and apparently the birds, while gregarious, were too truculent to permit close proximity of nests. Often two or three trees, suitable in every way for the primitive needs of these doves, intervened between occupied sites.

In most cases the nest, slight in structure, though usually somewhat larger and bulkier than that of the Mourning Dove, was placed in a mesquite, though a few were observed on the desert in palo verdes. Nests were built on inclined living limbs where forking of small branches gave a firm, broad support. The site varied from six to twenty feet from the ground, with about eight feet as an average height. In most of those that were examined the structure was composed of dead twigs of the mesquite, small in diameter, and from six to ten inches long. For the inner layers small twigs were chosen that had been dead for some time, so that the spines, abundant on mesquite limbs, crumbled at a touch and caused no discomfort to the brooding bird or to the young. The nest was flat and had merely enough depression to receive the eggs that often were visible through the loosely interlaced twigs at the sides. Two eggs formed a complete set. They were distinctly buffy in color when fresh but varied in depth of shade so that occasional sets were nearly white. When blown these eggs frequently fade out even when not exposed to light so that they appear dull white with hardly a suggestion of buff, a circumstance that caused unpleasant surprise when, a few days after they had been blown, I came to examine sets that I had chosen originally for their rich color. The eggs of the White-wing appeared to have a duller surface than the eggs of the Mourning Dove. Although two eggs formed a complete set it was not unusual to find that one was infertile; in addition there may have been mortality for some reason after eggs had hatched, as many nests were noted that contained only one young bird. Young White-winged Doves when first hatched were well covered with long, straggling down, that in color was dull white slightly tinged with buff. This natal down was replaced by secondary feather growth so rapidly that it had disappeared for the great part at the end of the first week. The feather quills that followed the down did not burst until they were quite long so that for a time the young were as grotesque as young cuckoos. The young birds were fed by regurgitation and at the age of four days received solid food in the form of undigested seeds, in addition to the usual diet of "pigeon's milk". Fledglings left the nest when between three and four weeks old, as nearly as I could ascertain. The first young bird able to fly was noted on June 12, and by June 15 birds of this age were fairly common. These young were still dependant upon their parents for food, and though able to fly well were undeveloped and small. On first leaving the nest they perched about in the mesquites, always seeking shade, but in a few days were often found on the ground, preferably where the soil was sandy. There they walked about in the thin shade of the mesquites, examining bits of sticks and other refuse curiously, often testing such fragments with their bills, or rested quietly, squatting on the earth. In many instances it was found that they were heavily infested with small ticks against whose attacks they seemed inexperienced. No ill results from the presence of these parasites were noted and older birds were free from them.

I was of the opinion that males did not aid in incubation, but this I was unable to ascertain with certainty. Occasionally I saw both parents perched on the sides of a nest that contained young, but all birds that were definitely identified while engaged in incubating, were females. Each male chose a perch near the

nest site, usually from ten to thirty feet away, and remained there on guard while the female was sitting, save for the time required to secure food. Such perches were selected in situations that were well shaded from the direct rays of the sun during the heat of the day, and when not occupied could be readily located by the collection of ordure, often considerable in quantity, on the ground beneath.

In early morning White-winged Doves began to call soon after day break, and when the sun appeared above the horizon were heard cooing in every direction. At this period of the day many males came out to rest on dead limbs in openings in the mesquite *montes*, or flew to more distant perches in mesquites or cottonwoods where they basked in the warm rays of the sun. Others chose perches in the tops of living mesquites where the thin foliage did not cast an appreciable shade. In mid-forenoon when the heat became oppressive they retired again to protected stations. Males had two distinct songs, that were given without apparent choice. One of these efforts may be represented by the syllables *who hoo who hoo-oo′*. The first three notes were gruff and abrupt, the last one strongly accented and somewhat prolonged. The other song, longer and more complicated, may be noted as *who hoo*, *whoo hoo*, *hoo-ah′*, *hoo-hoo-ah′*, *who-oo*. In this case the song was separated in five parts. The first section was short and low, the second louder and almost merged with the third; the third and fourth were more musical than the others and were strongly accented on the last syllable, while the last part was lower and was more or less slurred. At times the doves gave one or the other of these two songs in repetition for long intervals, or again alternated them rapidly. The longer song was more varied and pleasing to the ear as the other frequently was given in a burring, guttural tone that was often unpleasant. In addition to these songs males uttered a low, querulous, muttered note resembling *queh queh-eh* that served as a call to the female, or was given when squabbling with other males. No females were observed in the act of cooing and I was unable to ascertain their notes. Although males did not coo in unison the effect produced by hundreds of them calling at the same time was remarkable. Save for one or two birds that might chance to be near at hand, their notes seemed to come from a distance, and were so blended that it was difficult to pick out individual songs. In a large colony the volume of sound produced was so great that it carried readily for a distance of a mile and yet the tone produced was so soft that it was not deafening when near at hand. On the contrary the whole formed an undertone, continuous, and to my ear not unpleasing, that did not intrude sharply on the senses, of so vague a nature that faculties perceptive to sound soon became accustomed to it, so that through constant repetition it might pass unnoted. Although it filled the air with the same effect as that produced by the rushing of water, other sounds, the song of a Redwing or a Lucy's Warbler, the cooing of a Mourning Dove or the stamping of a horse, were heard through it clearly even when such noises originated at some distance. The effect as a whole was most remarkable and once experienced lingers long in memory.

Combats among males were frequent, but these were bloodless battles, as the birds merely flapped at one another uttering guttural notes, or when near at hand struck quickly with one wing. Often one male was at much trouble to drive all others from some trees, and once I observed one hustle away a pair of Mourning Doves that chanced to intrude upon his domain.

When females were flushed from nests containing fresh eggs usually they flew directly away with a loud *clap, clap* of their wings. When incubating or brooding young the procedure was often different. Then they dropped to the ground and fluttered rapidly away, continually falling forward as though injured, while moving the partly spread wings tremulously. Their course on such occasions was behind low hanging limbs or fallen branches where it was difficult to secure a clear view, a circumstance that should aid in attracting attention from any enemy. In case the male was near and had not recognized me he often dropped down to the ground and stalked about truculently, with the feathers on his back elevated and those on his throat and upper breast raised until each one stood out separate from the others, so that as he walked along he appeared twice his normal size. Occasionally other males from trees nearby flew down precipitately toward the female as though to determine what was wrong with her.

In displaying before females males had a curious habit or pose in which they raised the tail high and tilted the body forward. At the same time the tail was spread widely and then closed with a quick flash of the prominent black and white markings. In the breeding colonies males at intervals flew out with quick, full strokes of the spread wings, rising until they were thirty or forty feet in the air. The wings were then set stiffly with the tips decurved, while the birds sailed around above the mesquites in a great circle that often brought them to their original perches. The contrasted markings of the wings showed brilliantly during this flight and the whole was most striking and attractive. In the cooler part of the morning males performed constantly in this manner over the rookery.

When I sat down near nests the owners often perched near by, turning their heads curiously and watching me closely for many minutes. At the same time they twitched the tail nervously, spreading it as described above. This action was shown by wing-tipped birds also, so that it is apparently used when the birds are nervous, excited, or curious, as well as in display.

White-winged Doves start in flight with a loud clapping of wings that is accompanied by a whistling noise. When the birds are well under way their passage, while swift and direct, is noiseless. The sound at the start resembles that made by domestic pigeons. The White-wing, like certain tropical doves (for example the White-headed and Scaled pigeons) in perching in cottonwoods or other trees with dense foliage, usually alights among clumps of leaves on the higher outer branches rather than on dead limbs or in open situations such as those chosen by Mourning Doves. So well did the birds conceal themselves that after I had seen half a dozen fly into such a tree, it was not unusual to be unable to pick out a single dove in spite of their large size. In the mesquite they followed the same practice in perching, so that they were often observed merely as silhouettes through the thin foliage. When perched in trees they remained quiet save when they were calling.

In the desert areas White-wings nested more or less at random, wherever suitable palo verdes and mesquites occurred. In such localities males frequently basked in the morning sun on the flat tops of the huge sahuaros. There may be some irregularity in the period of breeding in this pigeon as on the evening of June 9, at Webb's Well near the northwest base of Woolsey Peak (Gila Bend Mountains), I found White-winged Doves gathering at dusk in little flocks of half a dozen or more to roost in palo verdes and mesquites along the banks of a dry wash. All that were killed in such localities were males. These desert birds proved to be warier than those found in the cultivated lands.

The morning flight from the colonies near the Gila River began an hour after sunrise and continued until nearly noon. During the middle of the day the birds were quiet, but they began again to pass out to feed in the late afternoon, continuing until sunset. While in the mesquite *montes* I saw little of these daily flights, save when birds chanced to pass overhead, as the cover was too dense, but from the open country surrounding the groves the interesting movement of the birds was easily observed. The White-wings left the colonies singly or in little flocks of five or six. As they travelled, these smaller bands frequently joined until often fifteen or twenty birds were flying in one group. A purple drupe, one-fourth of an inch in diameter, borne by a spiny shrub (*Condalia spathulata*) was a favorite food at this season and the birds also ate the fruits of the giant cactus as rapidly as they ripened. Various seeds were taken also. Harvesting of grain began in this valley about the first of June and continued until the end of the month. Fields of wheat or barley that had been cut recently were attractive to the White-wings as here they found an abundant source of food. The wheat grown in this region shattered (or shelled out) badly during the process of cutting, binding, and shocking, so that kernels of grain were scattered thickly over the fields. Further, there was much additional waste grain from heads matured or stalks too short to be bound that fell to the ground when cut. As may be imagined the White-wings sought this food supply eagerly. They were gregarious in feeding as in nesting so that newcomers passing over the grain fields usually decoyed to those already on the ground until many had gathered in one spot. The grain stubble was cut high and afforded the feeding bands shelter, as the doves were short in leg and walked about with the body bent forward. It was often the case that not a bird was seen in looking across a field of wheat stubble, though several hundred might be feeding there under shelter of the wheat stalks and the low levees thrown up to direct the flow of the water used in irrigation while the crop was being grown. White-wings were wary and easily alarmed while feeding. At times I crawled up under shelter of weeds to watch them at close range. If one of the feeding birds happened to observe some slight motion, the heads of all were up in an instant and all remained motionless, while in a minute or so they usually flew hastily in sudden alarm. Where they were shot at they became even more wary. After feeding, little groups of White-wings often flew up to rest for a time in the shelter of cottonwoods or mesquites.

Occasionally, when feeding in fields where wheat had not been shocked a dove hopped up on one of the bundles of bound grain and pecked at the heads of wheat, choosing, preferably, those that were short so that they were held firmly by the twine. Or a flock of half a dozen dropped down on a shock of wheat and fed on the cap sheaves for a few minutes. Usually, however, the birds preferred to feed in the more secure cover of the stubble and confined their attention to the abundant waste grain as long as this was available. When wheat was not threshed within a short time after it was cut these doves were said to cause serious damage to the grain in the shock. This was particularly true in the case of isolated fields that remained after the surrounding crops had been removed. For this reason the White-winged Doves were in bad repute among many of the ranchers.

It has been common practice for many years for sportsmen to hunt White-winged Doves during the months of June and July when the birds were ranging over the cultivated fields. Though this has been done under the guise of pro-

tecting crops it has been carried on in the main simply for sport, as the majority of the doves killed are shot in stubble fields from which the grain has been removed, or when in flight to or from the colonies in localities where they may be doing no damage. Occasionally men and boys even invaded the nesting colonies and slipped about among the low mesquite potting the male birds or shooting the females as they sat on their nests containing eggs and young. Others, waiting until the squabs were nearly grown, knocked the young doves from their nests with poles and gathered them in sacks for table use. Such harrying during the season when the birds are breeding can not be considered legitimate and can lead only to the decimation of the species. The mortality among young from the killing of their parents is tremendous.

Hunters have given the matter of damage by White-winged Doves much publicity in the local press in order to insure that they may be allowed to kill the doves with impunity. Most of the claims made concerning damage by these birds are based upon the finding of quantities of wheat in the crops of the birds that are killed. Personally I shot a considerable number of doves for examination and in most instances found wheat in their crops. Observation of the feeding birds, however, soon showed that all save a very small part of this grain was waste gleaned from the stubble. For example, White-winged Doves were feeding in droves in fields near Palo Verde where wheat was in the shock, yet on careful examination of 140 acres distributed in 8 fields I was able to find only nominal damage in three fields covering 60 acres. Where nominal damage was indicated I found from 10 to 30 heads of wheat on scattered bundles that had a part of the kernels missing. This injury was so slight that it amounted to nothing. Thirty-five acres of this grain belonging to William Walton of Palo Verde when threshed yielded 435 sacks of wheat, a sufficient commentary on the absence of damage. Claim was made that the White-wings occasionally attacked wheat or barley before it was cut. Where the grain had lodged or fallen badly this was true, in some cases at least, but it did not seem probable that the doves would injure standing grain unless in occasional fields where the stalks were very short through alkali in the soil, lack of water or other reasons.

Where the doves are doing actual damage they should be driven out, but this matter should be left entirely to the ranchers and should not be made an excuse for general hunting. The birds are easily frightened and can be driven from fields by a comparatively small amount of shooting. Damage was without question more serious during the first settlement of this portion of the Gila Valley, as ranches then were widely scattered and threshing outfits few, so that it was necessary often for wheat to be exposed for a long time in the shock before it was removed from the fields. At present, however, many of the ranchers are using small combination harvesters that cut the grain and thresh it at one operation, and the entire crop is handled so rapidly even when dependence is placed upon binding and threshing that opportunity for damage is slight. Where, for any reason it is necessary to leave wheat in the field it may be stacked and the top of the stack capped with tarpaulins when it will be safe from all depredation. In 1919, according to my observation, the damage from White-winged Doves was wholly negligible.

Many hunters claimed that if they were not permitted to kill White-wings during the breeding season they would get no shooting at all, as the birds leave the region immediately after rearing their young, an excuse that is poor at best, but that may be considered for the moment. From information available it seems

that though the doves may forsake the cultivated fields they feed in flocks on the desert wherever food is available and that large numbers remain until October or later each year. The practise of hunting these doves in the nesting season is inexcusable, save in occasional instances where it is necessary to protect crops. With the rapid settlement of the country and the reclaiming of land under new irrigation projects at present under way, the large colonies of the White-winged Doves in the lower Gila Valley will disappear. The mesquite groves in which these birds nest furnish valuable wood for domestic use and for fence posts so that the mesquite *montes* are being steadily cut away. The doves will in consequence be reduced in number as they have been elsewhere, near Phoenix and Tucson, but should remain fairly common, as scattered pairs will continue to nest on the desert and others will take up domiciles in cottonwoods and other trees scattered through the cultivated fields and along the irrigation ditches.

Washington, D. C., February 18, 1920.

A NEW PTARMIGAN FROM MOUNT RAINIER

By WALTER P. TAYLOR

WITH THREE PHOTOS

IN COMMENTING on the status of the three currently recognized subspecies of white-tailed ptarmigan, Riley has suggested (Canadian Alpine Journal, 1912, p. 60) that a specimen from Mount Rainier, Washington, in the Biological Survey collection, U. S. National Museum, probably represents a distinct form. Additional material secured on Mount Rainier in 1919 by a field party of the Biological Survey and coöperating institutions demonstrates the accuracy of Riley's suggestion. For the loan of material or access to collections I am indebted to Prof. J. W. Hungate, of the State Normal School, Cheney, Washington, Stanley G. Jewett, Portland, Oregon, J. M. Edson, Bellingham, Washington, and to the authorities of the U. S. National Museum. For many helpful suggestions, the loan of measurements in manuscript, and other courtesies, I am under obligation to J. H. Riley of the U. S. National Museum. Edward A. Preble, T. S. Palmer, Alexander Wetmore, and Harry C. Oberholser of the Biological Survey have also been generous with advice and help.

Lagopus leucurus rainierensis, new subspecies

Rainier White-tailed Ptarmigan

Lagopus leucurus, Ridgway, Man. N. Amer. Birds, ed. 2, 1896, p. 202 (probably part); Chapman, Bull. Amer. Mus. Nat. Hist., vol. 16, 1902, p. 237 (part); Dawson, Birds of Washington, 1909, vol. 2, p. 590 (part); American Ornithologists' Union Check-List of North American Birds, 1910, p. 142 (probably part); Riley, Can. Alp. Journ., 1912, pp. 59-60 (part).

Diagnosis.—Adults in nuptial plumage similar to *Lagopus leucurus leucurus*, but dark areas more blackish; buffy wash over light areas not so consistently present, and when present paler.

Type.—No. 269375, U. S. Nat. Mus. (Biological Survey coll.); adult female; Pinnacle Peak, 6,200 feet, Mount Rainier, Washington; July 19, 1919; collected by W. P. Taylor; original no. 479.

Geographic range.—While all specimens so far examined which are clearly referable to the new form are from Mount Rainier, it is not improbable that the ptarmigan occurring in the Cascade Mountains, at least in central and southern Washington and in Oregon, if the bird occurs in that State, will be found to be nearest this subspecies. The life zone occupied is Arctic Alpine.

Specimens examined.—Eight adults and four young birds, all from Mount Rainier, Washington, as follows: Near Nisqually Glacier, 3; Pyramid Peak, 6,000 feet, 1; Indian Henrys, 7,000 feet, 1; Indian Henrys, 7,500 feet, 1; Indian Henrys, near timberline, 2; Indian Henrys, 5,300 feet, 1; Pinnacle Peak, 6,200 feet, 1; McClure Rock, 7,300 feet, 1; Mount Rainier, 1.

Plumage descriptions.—Adult males in nuptial plumage: The plumage shows evident signs of wear. Back white, mottled and barred with blackish; individual dark feathers blackest toward ends, being nearer hair brown or mummy brown toward bases; the dark feathers variously barred and marked with whitish or buffy, some conspicuously (as in no. 853, collection of Stanley G. Jewett), some scarcely at all (as in no. 101,

Fig. 33. Typical Ptarmigan country on the Mount Ruth ridge, 7,500 feet, north side of Mount Rainier, Washington. The easterly eminence of the ancient crater in the distance.

Museum, State Normal School, Cheney, Washington, collected by J. W. Hungate). Top of head white thickly sprinkled with wedges of blackish. Lower back and rump variously modified with darker feathers. Wings and tail white; some of wing coverts blackish like feathers of back; upper tail coverts near fuscous, pencilled and barred with light ochraceous-buff, or light buff; underparts white, sometimes washed with light ochraceous-buff; breast blotched and barred with blackish; throat white with scattered splotches of black. One bird (no. 853, collection of Stanley G. Jewett), has acquired dark flank feathers on the left side, these feathers crossed by four bars of blackish. Blackish portions of feathers beneath sometimes pencilled with light buff.

Black mottling and barring on belly and flanks of males less extensive than in females; the former are also less buffy, especially dorsally. The black blotches are larger in the male than in the female, and consequently the black bars are broader and

less numerous; the black areas often tend to coalesce. The bare red skin above the eye is brighter and more conspicuous than in the female.

Adult male in postnuptial plumage: One specimen (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.) collected September 26, 1919, is rapidly acquiring the white winter plumage. Scattered black feathers from the summer plumage, much worn, still remain, but the handsome fall feathers (ground color light buff to warm buff, exquisitely dotted and pencilled with blackish) occupy most of the back, rump, and breast.

The period during which the postnuptial plumage is worn must be short. The earliest appearance of fall feathers in the series from Rainier is August 10, as exemplified in a female bird (no. 156505, U. S. Nat. Mus., Biol. Surv. coll.) which is acquiring a few transitional feathers. In a male collected September 26 (no. 269376, U. S. Nat. Mus., Biol. Surv. coll), the fall plumage is being rapidly replaced by the immaculate white plumage of winter

Adult females in nuptial plumage: As in the males, the plumage shows evident signs of wear. Upperparts heavily mottled with black, the feathers variously spotted and barred with light buff to ochraceous-buff, and edged and sometimes spotted or barred with white. Underparts white, more or less extensively washed with pale buff; breast and sides heavily barred with black, the flanks and mid-belly also with scattered barred feathers. Throat white, sparsely spotted with dark brown. Wings and tail white.

Adult females in postnuptial plumage: No specimens fully exemplifying this stage are at hand from Mount Rainier. One bird (no. 156505, U. S. Nat. Mus., Biol. Surv. coll.) taken August 10, 1897, is acquiring feathers of this plumage, which approximate light ochraceous-buff or ochraceous-buff in color, thus being a shade darker than in the fall male described above.

Young, transition from natal to juvenal plumages: A series of four specimens (nos. 156494-156497, U. S. Nat. Mus., Biol. Surv. coll.) taken by Dr. A. K. Fisher on Mount Rainier July 31 to August 2, 1897, exemplify an early stage of plumage All are beginning to acquire feathers of the juvenal plumage, but, excepting the wings and scapulars, and in some the tail, the natal down still covers the entire body. In two (nos. 156495, 156497) the juvenal feathers are just appearing on the tail; all have them barely started in the scapular area, longer in one (no. 156497).

Down of upperparts colored as follows: top of head cinnamon or sayal brown, in one (no. 156494) modified by blackish; sayal brown area inclosed by black line; back with broad lengthwise area of sayal brown, bordered and often modified by blackish; in one (no. 156497) the brown area is finely cross-barred with black; a median black line, bordered by pale smoke gray, connects the coloration of the top of the head with that of the back; shoulders and underparts pale smoke gray, the breast lightly washed with buffy, and flanks and belly with suggestions of buffy; face white, crossed by two or three distinct black bars, one extending backward from nostril and eye, one from corner of mouth, and one from below corner of mouth; two black spots (fused in some specimens) above nostrils; natal down of wings anteriorly sayal brown, variously modified by black; feet and legs pale smoke gray, with suggestions of buffy; incoming scapulars (juvenal plumage) fuscous black, tipped with wedge of white, and modified with warm buff; wings (juvenal plumage) deep mouse gray; the feathers tipped with white, and, particularly the secondaries and coverts, edged and otherwise modified with buffy; bill black, tipped with cream buff or whitish.

Measurements.—Four adult males of *Lagopus leucurus rainierensis* measure as follows: Wing, 181.5 mm. (187-176); tail, 99.5 (106-96); culmen, 15.5 (16.0-14.5); depth of upper mandible, 6.3 (6.6-6.0). Four adult females: Wing, 175.7 (182-171); tail 86.7 (90-82); culmen, 15.2 (16.5-13.5); depth of upper mandible, 6.2 (6.4-6.1).

On comparison of these measurements with those published by Riley for *Lagopus leucurus peninsularis* from the Kenai Mountains, it will be observed that the Rainier specimens are longer-winged on the average; the wings and tails of the series of *L. l. rainierensis* are nearly the same as in specimens of *L. l. leucurus* from Alberta and British Columbia, but average less than in examples of *L. l. altipetens* from Colorado.

Remarks.—The type locality of the new subspecies is near the southern extremity of the geographic range of the species in the major Pacific Coast mountain chain. Comparison with specimens of *Lagopus leucurus leucurus* from

Moose Pass, British Columbia, Moose Pass, Alberta, and Moose Branch of Smoky River, Alberta (one specimen from Henry House, Alberta), practically topotypes of *leucurus*, all in nuptial plumage, indicates that the dark areas in *rainierensis* average more blackish than in *leucurus*. In the latter the shade is close to mummy brown (Ridgway, Color Standards, 1912), while in *rainierensis* they approximate one of the darker shades of blackish brown. The buffy portions of the feathers in *rainierensis* are paler than in *leucurus*, being, in the former, near light ochraceous-buff, while closer in the latter to ochraceous or ochraceous-tawny. In two male birds from Moose Branch of Smoky River, Alberta, and

Fig. 34. NEST SITE OF PTARMIGAN ON RIDGE NEAR MCCLURE ROCK, ABOVE PARADISE VALLEY, 7,300 FEET, SEPTEMBER 26, 1919. THE SCATTERED SHELLS AT THE BASE OF THE LARGE ROCK IN THE FOREGROUND JUST ABOVE THE BLACK CROSS PRECISELY INDICATE THE POSITION OF THE NEST. THE PRINCIPAL PLANTS IN THE VICINITY ARE RED HEATHER, PHLOX, A SEDGE, AND THE TINY ALPINE LUPINE.

Henry House, Alberta (nos. 222661 and 222655, U. S. Nat. Mus.), there is a light wash of pale buffy. A male from Moose Pass, Alberta (no. 222656, U. S. Nat. Mus.) has the buffy scarcely indicated. Males of *rainierensis* are immaculate white, or have less suggestion of buffy than the Moose Pass male. Thus the contrast between the black areas and the white ground color is more vivid in the new subspecies than in *leucurus*. A specimen of *leucurus* from Moose Branch of Smoky River, Alberta (no. 222661, U. S. Nat. Mus.) has some black-barred flank feathers as in no. 853 (collection of Stanley G. Jewett) from Mount Rainier; but while the Alberta example shows two or at most three distinct dark cross-bars on each feather the Rainier specimen has four dark cross-bars, and the cross-bars are narrower than in the Alberta example.

Brown feathers of the fall plumage on the back of a male of the new form (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.) compared with those in a bird from Moose Pass, British Columbia (no. 222656, U. S. Nat. Mus.) are noticeably less intense. But this apparent difference might not be borne out in a larger series.

Comparisons of *rainierensis* with ptarmigan from Colorado, including a topotype of *Lagopus leucurus altipetens* Osgood, show the Rainier form to differ in having the dark areas of summer plumage more blackish. At least one male specimen (no. 142372, U. S. Nat. Mus., Biol. Surv. coll.) taken on Bald Mountain, Colorado, has the fall browns much darker than in the only comparable male from Mount Rainier (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.).

Similar comparisons with ptarmigan from Medicine Peak, Wyoming, and five miles south of Twining, New Mexico, show much the same differences as those previously cited, the dark areas in *rainierensis* being more blackish. In a Wyoming female in summer plumage (no. 230372, U. S. Nat. Mus., Biol. Surv. coll.) the buffy areas are of a darker shade than is typical of the Rainier series; and two males from New Mexico (nos. 194588, 194,589, U. S. Nat. Mus., Biol. Surv. coll.) resemble the specimen taken on Bald Mountain, Colorado, in having the fall browns more intense than in the Rainier form.

Examples of *Lagopus leucurus leucurus* from various points in British Columbia, aside from those already mentioned, and from several localities in Alaska, demonstrate average differences similar to those cited, the dark areas of feathers in summer tending to be less blackish than in the Rainier subspecies and fall browns more intense.

I have seen no skins of *Lagopus leucurus peninsularis*. Riley states (Can. Alp. Journal, 1912, p. 60): "The type *L. l. peninsularis* is a female with a few feathers of the fall plumage just appearing; it is very dark, but there is a specimen (no. 156498, Biological Survey, Department of Agriculture collection) from Mount Rainier, Washington, still darker, and the latter probably represents a distinct form which for the present I am obliged to refer to *Lagopus l. leucurus*."

Specimens in the U. S. National Museum collection taken by Dr. C. B. Kennerly at Camp Skagit and Similkameen (nos. 16000, 16002, 16003, 34076) are apparently closer to *L. l. leucurus* than to *rainierensis*, the only bird in summer plumage (no. 16003) having the dark areas paler than in the new form. The others are in fall plumage, of which, unfortunately, scant material is at hand. The browns in these fall birds from Camp Skagit and Similkameen are paler than in the female from Mount Rainier (no. 156505), but very similar to, or even slightly more intense than in the fall male (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.).

Examples in the collection of J. M. Edson from Austin Pass and Bald Mountain (nos. 170, 207, 208, 209, J. M. Edson, Bellingham, Wash.) are in fall plumage. Two (nos. 207, 208) have been mounted and seem to be somewhat faded. One (no. 170) is passing into winter plumage. One (no. 209) is in nearly the same plumage stage as the fall male of *rainierensis* (no. 269376, U. S. Nat. Mus., Biol. Surv. coll.); in the blackness of some of the dark feathers this bird (no. 209) resembles *rainierensis*, but additional comparable material is necessary to determine with certainty the status of birds from the northern Cascades.

Habits.—Ptarmigan were found in a strip of timberline between altitudes of 6,000 and 7,500 feet all around the mountain. A nest discovered by J. W. Hungate at 6,100 feet on Pyramid Peak contained five eggs, one of which proved to

be infertile, one addled, and three in different stages of development to approximately ten days. The sitting bird was studied and photographed for several hours. She was more approachable than the average domestic fowl, finally even permitting herself to be stroked gently on the back.

While we never saw the male with the female and young, we did note adults of the two sexes together. But in such events nesting activities apparently were not in progress.

The ptarmigan furnishes an interesting example of protective coloration. The freezing habit is characteristic. Repeatedly we were startled to find that we had for some moments been looking directly at birds which we had not noticed until that instant, so quietly did they stand on the rocks, and so harmoniously did their coloration blend with that of their surroundings. There seems

Fig. 35. Female Ptarmigan on nest, Pyramid Peak, 6,100 feet, Indian Henrys Hunting Ground, Mount Rainier, Washington, July 11, 1919. The vegetation is red heather (*Phyllodoce empetriformis*) and white heather (*Cassiope mertensiana*).

to exist in these ptarmigan a marvelous correlation between need for protection and degree of protective coloration; for the young are best protected by their coloration, the hens next, the cocks least.

Young birds, up to six in number in each brood, were seen in different parts of the Park from July 29 well on through August. J. B. Flett, Senior Park Ranger, Mount Rainier National Park, found a ptarmigan track under a cliff at McClure Rock (7,300 feet), late in the fall of 1919. According to Flett, the ptarmigan usually descend in winter and are found below the terminal moraines of the glaciers, though occasionally they winter under cliffs at timberline, doubtless feeding on the foliage and berries of the abundant *Juniperus sibirica*.

MEASUREMENTS OF ADULT EXAMPLES OF *LAGOPUS LEUCURUS RAINIERENSIS*, ALL FROM MOUNT RAINIER, WASHINGTON

Males

Number	Collector	Locality	Date	Wing	Tail	Culmen	Depth of upper mandible
101	J. W. Hungate	Indian Henrys, 5300 ft.	July 11, 1919	187	100	16	6.5
269376	W. P. Taylor	McClure Rock, 7300 ft.	Sept. 26, 1919	176	96	14.5	6
853	S. G. Jewett	Indian Henrys, 7000 ft.	July 10, 1919	177	96	15.5	6.2
854	S. G. Jewett	Indian Henrys, 7500 ft.	July 10, 1919	186	106	16	6.6
			Average	181.5	99.5	15.5	6.3

Females

269375	W. P. Taylor	Pinnacle Pk., 6200 ft.	July 19, 1919	182	90	15	6.3
156505	V. Bailey	Indian Henrys, above timberline	Aug. 10, 1897	172	83	13.5	6.1
156498	A. K. Fisher	near Nisqually Glacier	Aug. 2, 1897	178	92	16.5	6.4
103	J. W. Hungate	Pyramid Pk., 6000 ft.	July 11, 1919	171	82	16	6.1
			Average	175.7	86.7	15.2	6.2

Washington, D. C., April 8, 1920.

THE CALIFORNIAN RACE OF THE BREWER BLACKBIRD

By J. GRINNELL

(Contribution from the Museum of Vertebrate Zoology of the University of California)

TO SEE that the Brewer Blackbirds of west-central California are appreciably smaller than those of the Great Basin and Rocky Mountain regions requires but a few moments examination of an appropriate series of specimens. Furthermore this difference has already been commented upon, at least once, nearly twenty years ago. Under *Scolecophagus cyanocephalus* (Wagler), Ridgway (Bds. N. and Mid. Amer., II, 1902, p. 249, footnote) makes this statement: "California specimens average decidedly smaller than those from east of the Sierra Nevada, as the following measurements show" [giving a table based on two males and five females from California and five males and four females from the "Rocky Mountain pleateau"].

In view of the ease of securing specimens of so common a bird, and in view of the continual activity in describing subspecies, it is curious that the California Brewer Blackbird should have been left so long without a subspecific name. The race seems to me to possess quantity of difference to quite as great measure as many subspecies of birds which have already stood for years on our lists. None of the scientific names given by Ridgway (*loc. cit.*) in the synonymy of the

Brewer Blackbird appears to be safely applicable to the California form. Without more ado, therefore, let it be called

Euphagus cyanocephalus minusculus, new subspecies

California Brewer Blackbird

Type.—Male adult; no. 34136, Mus. Vert. Zool.; Palo Alto, Santa Clara County, California; January 26, 1901; collected by J. Grinnell; orig. no. 4577.

Diagnosis.—Similar to *Euphagus cyanocephalus cyanocephalus* but averaging smaller throughout; metallic sheen of back, rump, and posterior lower surface in male steely blue rather than brassy in tone.

Measurements.—Ten males of *E. c. minusculus* from west-central California (Berkeley, Palo Alto, Monterey, etc.) give average and extreme measurements, in millimeters, as follows: Wing, 124.9 (121.2-130.9); tail [from base of uropygium], 105.9 (101.1-111.5); tarsus, 32.2 (30-8-33.5); exposed culmen, 18.8 (17.8-20.0); depth of bill at nostril, 7.3 (6.7-7.8). Eight females from same region: Wing, 115.0 (111.8-118.5); tail, 97.8 (92.2-102.0); tarsus, 30.1 (26.8-31.8); exposed culmen, 17.1 (16.1-18.6); depth of bill at nostril, 6.7 (6.1-7.1). Weights, in grams, of four males: 69.2 (67.1-74.0); of five females, 58.7 (52.2-66.7).

Ten males of *E. c. cyanocephalus* from southeastern California (Death Valley and points in the valley of the Colorado River), where migrant or wintering, give average and extreme measurements as follows: Wing, 130.9 (129.1-134.3); tail [from base of uropygium], 110.8 (102.5-116.5); tarsus, 33.2 (31.2-34.7); exposed culmen, 19.4 (18.6-20.4); depth of bill at nostril, 7.7 (7.3-8.3). Eight females from same localities: Wing, 118.7 (115.6-121.8); tail, 99.1 (95.6-101.8); tarsus, 31.6 (30.2-33.0); exposed culmen, 17.7 (16.8-18.7); depth of bill at nostril, 7.2 (6.7-7.7). Weights, in grams, of six males: 77.4 (71.0-85.7); of three females, 61.2 (54.4-65.2.).

A series of *E. c. cyanocephalus* was loaned the writer, through the kind agency of Mr. Wm. C. Bradbury, of Denver, from the Colorado Museum of Natural History. Eight properly selected males out of this series, from localities in Colorado and Texas, show average measurements as follows: Wing, 131.0; tail, 114.5; tarsus, 33.1; exposed culmen, 19.6; depth of bill at nostril, 8.1.

Distribution.—*E. c. minusculus* occupies the Pacific slope of California (probably also of northern Lower California and of Oregon). It is permanently resident, save at high altitudes in the mountains where heavy snows bury its food supply in winter. It is this form which breeds in the mountains and coast district of southern California south to the Mexican line, as also throughout the valleys and foothills of California west of the Sierran crest, north at least to Shasta Valley, Siskiyou County.

E. c. cyanocephalus occurs as a transient and winter visitant in suitable parts of the Colorado and Mohave deserts; also this subspecies, though not so typically, breeds on the east side of the Sierras, around Mono Lake and at the head of Owens Valley, and in the Modoc region. The birds which winter on the Colorado and Mohave deserts probably breed in northern Nevada and to the northward and eastward.

Remarks.—Variation is marked, in all respects, in the Brewer Blackbird. The means of the divergent geographic races are admittedly close at best, and the individual variation brings wide overlapping, as will be seen upon consulting the measurements here given. Though the difference in stoutness of bill would seem to be the easiest thing for a person to use in discriminating series of specimens, care must be exercised to take into account the other size features as well. The remark made by Baird in 1858 (vol. IX, Pac. R. R. Reports, p. 552) concerning this species still holds, even though some of the variation is now found to be subspecific: "The culmen is sometimes much curved from the very base, sometimes quite straight; the size of the bill varies considerably". With birds from the coast district of California, the relative slenderness of the bill is a salient feature. But when birds from the Sierras and from northeastern California are examined trouble is found in allocating individuals. Series must then be available, to permit naming the form represented on the basis of *average* of charac-

ters. The same remarks apply with reference to the feature of coloration set forth in the diagnosis. The steely blue rather than brassy tone of the metallic sheen is easy enough to see in the coast-district birds; but it begins to fail in the birds from the Sierran foothills. To express the situation in another way, *Euphagus cyanocephalus cyanocephalus* intergrades with *E. c. minusculus* over a rather wide belt of country adjacent to and including the Sierra Nevada.

Berkeley, California, May 31, 1920.

FROM FIELD AND STUDY

A Feeding Habit of the Cedar Waxwing.—The following observations, disclosing a habit of the Cedar Waxwing (*Bombycilla cedrorum*) which was unfamiliar to the writer, may perhaps be of interest to others. The note-book entry was made in the Flathead Forest, near Belton, Montana.

August 17, 1915, at Ouzel Creek, on the Middle Fork trail: I watched a Cedar Waxwing feeding berries to her full-grown young. After descending to a service-berry bush and remaining there a few seconds, the bird flew up to a dead tree, followed by the young birds, which sat in expectant attitudes near her. The parent had a red (unripe) berry in her bill and she fed this at once to one of her family. She then poked her head toward the young again, gave a little gulp, and behold! another berry was in her bill. This she gave to a youngster near her and at once produced another berry in like manner; then another and still another, until she had fed them five whole berries in succession. Although each berry was brought forth with a distinctly visible gulp it apparently did not involve much effort.—Alexander D. Du Bois, *Chicago, February 8, 1920.*

A Plague of Rufous-crowned Sparrows.—From about the middle of November, 1919, to the middle of March, 1920, there was a flock of Rufous-crowned Sparrows (*Aimophila ruficeps*) around my home in Eagle Rock. The birds were exceedingly troublesome because of the damage they did to plants. A small area of lawn close to some shrubbery was picked almost bare around the edges, the clover being eaten first and then the grass. It was necessary to cover young seedlings with wire netting to prevent complete loss; older plants were badly injured. Buds on bamboos were eaten during the colder part of the year, and for a few days later in the season, the birds were to be seen eating the buds of fruit trees, but they left before much harm had been done. The flock of *ruficeps* numbered about twenty. The sparrows kept together much as quails do and would fly or run from one place to another at the same time.

It may be of interest that "white-crowns" were really uncommon about the place this year until the rufous-crowns had disappeared, when both the Intermediate and Golden-crowned Sparrows became fairly abundant. This is the first year that sparrows have been troublesome in any way, though I have often wondered why we escaped the depredations so commonly committed. I have never seen a *ruficeps* about the grounds until this winter, but have heard them singing on the brush-covered hillsides. Perhaps the visitation of rufous-crowns should be looked upon as an honor, but from one point of view it was certainly a nuisance.—C. O. Esterly, *Eagle Rock, California, March 29, 1920.*

Winter Nesting of the Ground Dove.—The Mexican Ground Dove (*Chaemepelia passerina pallescens*) has been noted as a rare spring visitor in this vicinity (Brawley, Imperial County, California) since 1912, in which year it was first seen on February 1. A pair was seen on March 30 of that year, and one of the birds shot for identification. It has been seen on several occasions since, but no nests have been found until this year.

On November 22, 1919, a dove was seen in my yard and on the 25th a dead specimen was found in an irrigating canal. I was very much surprised on December 21 to find the half of a small white egg-shell and after considerable search to find a Ground Dove brooding a single young in its nest in a eucalyptus tree. The nest was well built for a dove's nest and being set on some lodged bark was well hidden from view from the ground.

The nesting birds were not disturbed and two weeks later the two old doves and the young were discovered feeding on the ground. They soon flew to a tree where the young bird was fed by regurgitation, but by one of the parents only. No time was available for observation until the following Sunday when the three doves were again seen feeding, and later all three flew to an umbrella tree where the young dove was fed by both parent doves. The young dove after being fed once hopped onto the old birds back then down to the limb on which the old dove was perched; then, when not being fed, it extended its wing out over the parent dove and gently tapped the back of its parent until it was fed again. It then flew to where the other parent dove was perched, where it went through the same actions. Whether this is typical of the behavior of young Ground Doves I am unable to say.

Two Ground Doves were seen pursuing one another through the trees on January 16, 1920, to all appearances mated. A second nest of this species of dove was found on the 22nd of January. This nest contained but one young bird which left the nest the next day and has not been seen since. This nest was also in a eucalyptus tree, about 18 feet from the ground, and was a rebuilt Mourning Dove's nest. This second nest was watched, and on February 14 was seen to have a sitting Ground Dove on it. The two eggs it contained were collected the next day and found to have been incubated already several days. —John C. Fortiner, *Brawley, California, February 29, 1920.*

Calaveras Warbler in San Benito County, California.—The Calaveras Warbler (*Vermivora ruficapilla gutturalis*) is well known in high altitudes along the Sierras in California, where it breeds over an extended range, and it is found also on the higher mountains north of Lake County and in the migrations on the lowlands in southern California. It has seldom been noted, however, on the ocean side of the great valleys or along the coast north of Santa Barbara. Two records only in this area between Santa Barbara and Lake counties are all that I remember having noticed; one made by Joseph Grinnell just back of the Berkeley campus on September 9, 1912, when two individuals were seen by him at close range (Condor, xvi, 1914, p. 37), and one for San Benito County, where two birds of this species were noted on April 20, 1899, by the late Mr. T. E. Slevin and myself, as we were collecting together near Paicines, one of the birds being secured by him (Condor, iii, 1901, p. 126).

This year, on April 17 (1920), in company with Dr. G. Dallas Hanna, of the Department of Palaeontology, California Academy of Sciences, a number were noted about four miles southeast of The Pinnacles, on Bear Valley Creek, as near as we could make out from our map. Dr. Hanna and I had motored from Hollister to "The Pinnacles", a rather striking mass of rocks where a great "fault" has occurred, about 30 miles south of that town. It was a cold, windy day, and having one long stretch of very badly cut up road to negotiate we arrived late at our destination. At one particularly inviting spot on Bear Valley Creek we were inclined to stop, but the delay we had experienced decided us to push on as we did not then know how much longer it would take us to reach our objective point. Reaching this spot about three o'clock in the afternoon on our return, however, we concluded that we had time enough to spare for this work and so stopped at a place where the little stream ran between a small meadow and a brushy hillside, with willows and cottonwoods on its banks—an ideal place for warblers. The first bird that caught my eye was a Calaveras Warbler, and further search developed the fact that there was quite a number of individuals of this species moving about. The high wind made it very difficult to distinguish these warblers from some of the other species among the constantly moving leaves and branches of the trees, but we certainly saw twenty-five or thirty of them, at least. They were very restless and seemed to be moving up stream in a northerly direction, often leaving the trees along the stream to fly up into the brush, or vice versa. The difficulty of identifying them quickly in the midst of fluttering

leaves was so great that about the time we would have one positively identified it would be just too late to shoot.

Dr. Hanna kindly assisted me in the endeavor to procure specimens for identification and we finally succeeded in securing four. It was a pity that we did not obtain a greater number, for those taken all proved to be males, and we do not know whether there were any females in this flight, or whether the males were migrating alone, as happens with some species.

Three days later (April 20), we went some distance up the Tres Pinos Creek into the Panoche Pass, without going as far as the summit. This also was a cold windy day, and but few birds were seen or heard. I did not see any Calaveras Warblers to be sure of, myself, but Dr. Hanna secured another male here. We were very unfortunate in having such weather to contend with, as it hampered our observations extremely. While Dr. Hanna was primarily interested in his own line he also kept a keen eye open for birds, to which he is also very partial, thereby being of great assistance in my work, and for which I take this opportunity of thanking him.

Several other likely canyons in the county were visited, particularly along small streams with more or less wooded banks, but no more of this species were found among the numbers of the commoner warblers that were met with. Press of other matters compelled us to return to San Francisco without having had the time to go back to The Pinnacles for a more thorough study of the situation, but I will hope for an opportunity next spring to look farther into the matter, and to ascertain whether or not this species migrates regularly along that range of mountains.—Joseph Mailliard, *California Academy of Sciences, San Francisco, May 6, 1920.*

Bald Eagle at Wawona.—Upon a visit to Fresno, California, in 1916, I saw in the store of Mr. F. G. Normart, a local taxidermist, a mounted specimen of the Bald Eagle, presumably the southern subspecies, *Haliaeetus leucocephalus leucocephalus.* Inquiry developed that the bird had been killed at Wawona, Mariposa County, about July, 1914.—Tracy I. Storer, *Museum of Vertebrate Zoology, Berkeley, California, May 14, 1920.*

Another Rusty Song Sparrow from Southern California.—On December 1, 1919, while collecting Fox Sparrows along a little canyon to the north of here, I flushed a very dark colored Song Sparrow from the weeds. The bird was collected and sent to Mr. H. S. Swarth for his determination. He says: "The dark colored song sparrow seems to me to be *Melospiza melodia rufina.* At any rate I can duplicate it with birds from the known habitat of that subspecies." There appears to be only one other known occurrence for this form for southern California, and that from Riverside (Swarth, Condor, xii, 1910, p. 108).—Wright M. Pierce, *Claremont, California, February 23, 1920.*

The Harris Hawk a Breeder in California.—On March 30 of this year (1920) I noticed a pair of Harris Hawks (*Parabuteo unicinctus harrisi*) in the act of mating near Brawley in Imperial County. I was not able to find their nest, but the next day about eight miles away and three miles west of Calpatria I took a set of three eggs. These were very heavily incubated. As far as I am aware, this is the first record of the bird nesting in California, but judging from my own observation and that of others there is reason to believe that the bird will soon become a regular breeder in the Imperial Valley.

The nest was built in the crotch of a willow tree about thirty-five feet above the ground. It was on the outer fringe of a thick growth from the overflow of the Alamo River and easily visible from a near-by farm house. The climb was made for me by Ashton Rood, a young boy, and so I am unable to give an accurate description of the nest.—Griffing Bancroft, *San Diego, California, May 27, 1920.*

Further Notes on Differential Sex Migration.—I received the following letter from Mr. John A. Gregg of Burlington, Iowa, in response to my article on "Differential Sex Migrations of Mallards in New Mexico", recently published in the Condor. Mr. Gregg is an experienced sportsman and a keen and reliable observer.

"I was particularly interested in your article for the reason that for a great many years I have noticed the same differential applies in this territory. I recall shooting

one evening in November, either in 1901 or 1903, on Mercer swale in Crystal Lake Grounds, when there was a great flight of Mallards on, commencing about 3:00 P. M. They came in, in very large droves, and it was the exception to see a drake among them. I was out early the next morning and for the first few hours there were very few ducks, but about 10:00 or 11:00 o'clock there came a flight of Mallards similar in size to the flight of the evening before, and this flight was practically all drakes. I have noticed this on a number of different occasions, but never in a more pronounced way than on the day named.

"In the old days when the regular fall migration of Prairie Chickens came this way, I used to put in a good many mornings and evenings on the Mississippi bluffs shooting near Burlington and although at that time I was only a boy, I discovered that it was the exception to kill a cock chicken; the great majority of the migration was of hens. But in the winter, going into the upland corn fields in this locality, I would find a preponderance of cocks, which led me to believe that the hens travelled south and congregated somewhere in that territory, leaving the cocks behind."—ALDO LEOPOLD, *Albuquerque, New Mexico, March 26, 1920.*

Bird Fatalities Resulting from a Shipwreck.—During the night of October 25, 1918, the Canadian-Pacific Steamer *Princess Sophia* was wrecked, with total loss of life, on Vanderbilt Reef, Lynn Canal, Alaska, some forty miles north of Juneau. Quantities of heavy fuel oil escaping covered the water for miles about, finally settling on the beaches. It is the writer's theory that the great loss of life, some 343 persons, was largely occasioned by the escaping oil.

When patrolling the shores of Admiralty Island and adjacent waters in a small steamer on October 28, looking for bodies from the wreck, a Murre was seen swimming towards the vessel, occasionally assisting its feet with its wings. On coming close it was seen that its breast was heavily saturated with oil, and wings and other parts to only a lesser degree. The bird came to within a few feet of the boat, which was then drifting, all the while frequently raising itself on the water, shaking itself, and flapping its wings in efforts to get rid of the oil, and occasionally preening its feathers with its beak. The bird seemed not only devoid of fear but actually to wish companionship or a stable place to rest. Threatening movements only caused it to dive a few feet away, barely under the surface of the water, which gave excellent opportunity to observe the use of the wings in assisting the feet in the diving. It was finally killed with an oar, and on examination its plumage was found to be heavily saturated with crude oil, particularly on the breast and wings. No injuries were in evidence and its plight was apparently due entirely to the oil.

Numerous other Murres were noted at no great distances, all more or less covered with the oil, which covered the surface of the water from a mere film to a heavy scum. The men who were patrolling the beaches for bodies of the wreck victims reported that there were many of "the same kind of birds" (Murres) dead and dying on the beaches, and frequently the searchers were startled by a bird still alive suddenly struggling and flopping about at their feet.

Also many gulls were observed to have stained breasts, but none was seen to be helpless. On October 30, when about 120 miles south of the scene of the disaster (near Cape Fanshaw) on a passenger steamer, the writer observed one gull with oil-stained breast join the ship for a distance, and on January 1, 1919, at Wrangell, nearly two hundred miles south of the wreck, the writer observed a Glaucous-winged Gull walking about the streets, with a spot of discoloration about four inches in diameter on breast and sides that bore every evidence of being crude oil stain and quite possibly from the wreck to the north in the preceding October.

The extent of the losses among the bird population due to this accident can not even be approximated, but it must have been considerable, as the wreck occurred a short distance north of waters much frequented by Murres, and prevailing winds and tides drove the oil southward for many miles. The 23 miles under observation on October 28 were from 22 to 45 miles from the scene of the wreck, with considerable shoreline intervening, so there is good reason to believe that the fatalities to the birds that came under observation of the writer's party were but a small percentage of the total.—ERNEST P. WALKER, *Phoenix, Arizona, March 7, 1920.*

A Correction Concerning the Tawny Creeper.—In the Proceedings of the California Academy of Sciences, fourth series, IX, no. 10, p. 295, the Tawny Creeper (*Certhia familiaris occidentalis*) is listed among the species noted as nesting on Mount St. Helena, Napa County, California. In the original draft of this paper there was a question-mark after this subspecies, but somehow or other the matter escaped my mind thereafter. The nesting birds had been watched at close range, but no specimens had been secured at the time. I would like to say that some have been taken since and have proved that the former record of the form as *C. f. zelotes*, or Sierra Creeper, for that region is correct.—JOSEPH MAILLIARD, *San Francisco, May 6, 1920.*

A Correction Concerning the European Widgeon.—In the September-October, Condor, 1918, p. 192, I recorded a pair of this duck as bought in the Los Angeles public market. A critical comparison of the female, however, proves this bird to be *Mareca americana*, instead of *M. penelope*; hence the record of the European Widgeon stands good for the male only.—L. E. WYMAN, *Museum of History, Science and Art, Los Angeles, April 1, 1920.*

Habits of a Red-breasted Sapsucker.—In an old pepper tree, near the corner of Piedmont Avenue and Bancroft Way, in Berkeley, California, I saw for the first time a Red-breasted Sapsucker (*Sphyrapicus varius daggetti*) on December 26, 1919. He had made but a few holes when I found him, so I am sure he had come there but recently. I made not less than four daily observations and found the bird working and feeding on this tree every day from December 26, 1919, to March 5, 1920, inclusive, with the exception of February 6 and 27 when I made six daily observations but failed to see the bird. There were two days that I was unable to make observations. Thus I saw the bird 67 days out of 71. After March 5 I made six observations daily for ten days, but the Sapsucker had gone.

The pepper tree is low-branching, forking widely about three feet above ground. It is so nearly dead that it has failed to put forth a single leaf this spring. The bird began work on one of the largest branches, making four or five very straight rows of holes, with scattering holes on either side. Judging from the moisture about the holes there must have been considerable sap. After reaching a forking, he went to a new branch and worked in the same manner. In some cases the branches are girdled by three or more circles of holes just below the branching. The Sapsucker made about eight hundred holes during his stay.

The time of working and feeding was very regular. Rarely was he in the trees before 8:45 A. M., and very rarely was he present after 2 P. M. His stay between these hours was not continuous. He laid full claim to the tree. He allowed no other bird in the branches while he was there. In language more expressive than words he told them to leave and they left. He was not shy. When I came too close he moved backward, forward, or sideways with equal rapidity and ease. Occasionally he flew out of the tree when I put my hand on his branch, but on retiring from his sight he returned in a short time.

At times the Sapsucker would sit wholly immovable for twenty minutes. He was as apt to be on the under side of the branch as on the upper. Not infrequently I found him on the branches where he had first worked, as if feeding on the insects that had gathered in these holes. Afternoons, when the Sapsucker was usually absent, I saw at various times the Anna Hummer, Sierra Junco, Audubon Warbler and a Ruby-crowned Kinglet feeding from the Sapsucker holes—whether on sap or on insects I can not say.—MRS. H. J. TAYLOR, *Berkeley, California, March 26, 1920.*

The Connecticut Warbler Not Known from Kansas.—In a list of birds from Douglas County, Kansas, published in the Condor for 1909, page 162, I recorded a warbler taken on September 14, 1908, by Mr. Charles D. Bunker and myself as the Connecticut Warbler (*Oporornis agilis*). This has been known as the only occurrence of this bird in the state to the present time. Since that time I have had occasion to doubt the authenticity of this record and on re-examining the skin in question find that it is an immature specimen of the Mourning Warbler (*Oporornis philadelphia*). Error in identi-

fication was due to the fact that suitable material was not at hand for comparison at the time that the collection containing this warbler was first studied and the skins identified. Fortunately this erroneous record seems thus far to have been overlooked by others and so has not been quoted elsewhere.—Alexander Wetmore, *Biological Survey, Washington, D. C., May 26, 1920.*

Black-crowned Night Heron Gathering Nesting Material.—On April 27, 1920, while watching for Black-crowned Night Herons (*Nycticorax nycticorax naevius*) at the Cohen Estate, Buena Vista Avenue and Versailles, Alameda, California, one of the birds flew into a locust tree near at hand. It began stretching its neck and taking hold of small dead twigs with its bill, trying to break them off. After several attempts at different branches it found a twig that it could break and proceeded to carry it off. It seemed odd to find a bird that we associate with marshes and water gathering its nesting material in this manner.—Mrs. G. Earle Kelly, *Alameda, California, May 28, 1920.*

Lizard Eaten by Cactus Wren.—While collecting in the tree yucca belt about three miles west of the town of Mohave, Kern County, California, on March 30, 1920, I shot a male Cactus Wren (*Heleodytes brunneicapillus couesi*). When retrieved the bird was seen to have the abdomen slightly protuberant in the region of the gizzard as though the latter was unusually full. Upon dissection I found that the principal item of food, and the one which formed fully 95 percent of the contents of the gizzard was a Desert Brown-shouldered Lizard (*Uta stansburiana elegans*). The reptile was about two inches long. It had been swallowed entire although the head looked as though it had first been beaten almost to a pulp. I can find no previous record of a Cactus Wren taking reptiles for food. Beal (Biol. Surv. Bull. 30, 1907, pp. 64-65), in an examination of 41 stomachs from southern California, found insects to be the usual food, the only vertebrate material being some of the long bones of a tree frog.

At the locality where this bird was taken there were very few cholla cactuses and the Cactus Wrens were using the tops of the tree yuccas as song perches.—Tracy I. Storer, *Museum of Vertebrate Zoology, Berkeley, California, May 14, 1920.*

Bohemian Waxwing in San Diego County.—On March 29, 1920, I found two dead and badly decomposed Bohemian Waxwings (*Bombycilla garrula*) on the camping ground at Vallecito, eastern San Diego County. Some one had shot them with a small caliber rifle. This is the first record for this county, I think. Cedar Waxwings (*Bombycilla cedrorum*) have been rather common here in San Diego for several weeks. They feed on the berries of the pepper trees.—Frank Stephens, *San Diego, California, April 19, 1920.*

Notes from Escondido, California.—On March 1 a friend brought me two Crossbills that were taken from a flock of six feeding in his orchard. Three were shot under the impression that they were Linnets. His cat got one and the other two, being shot with a 22 rifle, were pretty badly used up. Of one it was impossible to determine the sex; the other appeared to be a male. Both are young birds showing more or less of yellow in the plumage. A peculiarity of one of them is in the crossing of the upper mandible on the left.

These birds appear to be *Loxia curvirostra bendirei*, and are the first Crossbills ever seen by me here, and as far as I know are the first recorded from this county. It is very possible that they may work south through the county in the higher mountains, but so far none seems to have been reported, all authorities available giving the range as extending "as far south as Pasadena in winter".

The measurements of the two birds, in millimeters, are as follows:

Length	Wing	Tail	Tarsus	Culmen	Bill from nostril	Depth of bill
166	97	59	18	18.0	15.0	10
166	94	55	18	17.5	14.5	10

Another new record for this section is that for *Molothrus ater obscurus*, the Dwarf Cowbird. I have been looking for this species for many years, and I found my first egg in a nest of the Least Vireo (*Vireo belli pusillus*) at Fallbrook on June 11, 1919. Al-

though the bird was not secured it was plainly visible at a distance of not over 50 feet, as it sat on a fence post watching me. It was without doubt referable to this subspecies.

This winter there has been a remarkable vertical migration of the Band-tailed Pigeon (*Columba fasciata*) from the higher mountains to the east of us, to the much lower canyons on the west leading to the coast. Such a migration is a very rare event here, even for a few birds. This winter they have come down in good-sized flocks and have not appeared to be any more wild than Mourning Doves would be. It has not been in any way an unusual winter in the mountains, so their coming is rather hard to explain.

There seem to have been an unusual number of the Whistling Swan (*Olor columbianus*) seen in the state this winter. In the latter part of January my attention was called to a large white bird flying north very high up and which was undoubtedly of this species. A few days afterwards three were reported to me as having been seen on a lake near here. Stephens, in his paper on the birds of San Diego County, mentions the species as "a rare winter visitant". I have lived in the county for thirty years and never saw it before.—C. S. SHARP, *Escondido, California, April 15, 1920.*

Notes on Nutcrackers in Monterey County, California—Persistent reports during the past winter of the Clark Nutcracker, or Clark Crow as so many people call it (*Nucifraga columbiana*), at Pacific Grove and Carmel, Monterey County, California, finally proved too much for my curiosity to withstand and led me to investigate the matter in person. A trip to Carmel was made on March 8, 1920, and one of these somber but saucy birds was about the first bird in view as the main street was reached. For the next two weeks one or more of these fellows was seen almost every day, although there were a couple of days toward the last of my stay when none was seen or heard. On those two days I thought that they must at last have left for the higher altitudes which are their natural abode, but the succeeding days showed them to be still with us.

While the Nutcrackers were usually in small companies they did not seem actually to flock together and nine was the largest number that I was positive of having seen at one time. There may have been more in the town, but there appeared to be good reason to believe that there were not *many* more, if any, for the town is small and these birds are commonly very noisy. When this number had collected in a small area no others were heard, at any rate.

The Nutcrackers had discovered that kitchen doors and back yards were good for some free "hand-outs", and they systematically visited many such. While they fed to some extent on the Monterey pines, apparently more intent upon the tips of young buds than upon the contents of the cones, they picked also a good many scraps and bits of grain or crumbs in the streets, paying no attention to people twenty or thirty feet away, but becoming wary of closer approach. They seemed to have certain hours for being in certain places, and for the first few days of my stay appeared in the street opposite the dining room window while we were at breakfast.

The cook at the El Monte Hotel used to put some bits of food on top of an eight-foot stump, reachable from the kitchen steps, and this out-door dining room was visited at least once a day for quite a while. As the household cat also had an eye to this arrangement, which in fact was originally made on his account, and as his visits were very irregular we could not always count on when the birds would come to feed here, as the cat was apt to include his avian visitors among the list of edibles—as I found out to my sorrow.

Dr. Walter K. Fisher, living in Pacific Grove, Monterey County, reported them as being there during the winter, and on March 22 I went over to stay a few days with him. There were some of the Nutcrackers in the town, but not as much in evidence as in the smaller town of Carmel. Dr. Fisher said that they seemed to come and go and thought that possibly they often made the trip from one town to the other, a distance of only three or four miles, with a hilly forest between.

In Pacific Grove lived a young lady who had enjoyed the sort of education that trains the mind for accurate observation, and this lady told me that on March 24, while she and her mother were resting from a walk in a picnic ground outside the town limits, some Nutcrackers came around and were feeding on crumbs, etc., left by picnic parties. As they were watching them one of the Nutcrackers began gathering sticks and other

nest-building material and flew with this to a neighboring clump of pine trees. I went with her the next day to the spot, but saw neither the birds nor any evidence of a nest, which, however, does not in any way cast aspersion upon her word. While the bird may not have been actually building, the instinct may have been strong and the nesting season was at hand.

As late as the last week in April the Nutcrackers were still in Carmel and Pacific Grove, as reported to me by Mr. F. C. Holman, a member of the C. O. C., and with whom I was collecting during this stay. Dr. Fisher thought they might possibly change their habits and nest somewhere in the vicinity, and promised to watch them as far as lay in his power.

It was my good fortune during the fortnight spent in Carmel to come across two specimens of the Slate-colored Junco (*Junco hyemalis hyemalis*) to add to the comparatively few records for this state. One of these was taken at Carmel on March 12, and the other in Pine Canyon, near Salinas, Monterey County, on March 19.—Joseph Mailliard, *California Academy of Sciences, San Francisco, May 6, 1920.*

Western Tanager in Santa Cruz Mountains in Summer.—While on a visit at Alma, Santa Clara County, California, from June 16 to 23, 1917, I heard and saw a number of Western Tanagers (*Piranga ludoviciana*). From perches well up in the coniferous trees the males were droning out their monotonous songs, and to all appearances the species was established for the summer.—Tracy I. Storer, *Museum of Vertebrate Zoology, Berkeley, California, May 14, 1920.*

EDITORIAL NOTES AND NEWS

Perhaps the most important ornithological happening announced in recent months is the resumption of activity on the part of the American Ornithologists' Union Committee on Nomenclature. According to the April *Auk* a two-day meeting was held in Washington, D. C., in February. As lately reconstituted the committee consists of Witmer Stone, Jonathan Dwight, H. C. Oberholser, T. S. Palmer, and Charles W. Richmond. It seems to us that this is a well-balanced representation of our ornithologists, as regards the varying views entertained currently in systematic ornithology. Probably no one question is more pressing than that of the constitution of the genus. In this connection we wish to call attention to the valuable article by the Chairman of the committee, Dr. Stone, in *Science* (vol. LI, April 30, 1920), entitled "The Use and Abuse of the Genus". This article sets forth precisely the dangers which threaten as a result of unlimited splitting, and, in our mind, makes the sanest sort of recommendations as to the course of action which should be followed henceforth by working systematists. It is fortunate that a man of Dr. Stone's views is at the head of the committee which will determine the names employed in the next official check-list of North American birds.

Mr. C. M. Goethe, of the California Nature Study League, Sacramento, gives a good pointer for bird students. He writes under date of June 2: Again I have been impressed with the advantages of the sleeping bag in bird study. On a trip last week-end into Cache Creek Canyon, Yolo County, dawn brought several thrilling experiences scarcely to be obtained otherwise. Quail with their young came almost within arm's reach. An oriole sang from a perch in a redbud immediately above the sleeping bag. Titmouses, flycatchers and grosbeaks were watched at similarly close range.

Dr. Edward W. Nelson, Chief of the Bureau of Biological Survey, is spending the summer in northwestern Alaska, where he is looking after the reindeer problem which was assigned to the Survey for attention. Dr. Nelson, it will be recalled, spent four years, 1877-1881, in Alaska, chiefly in the vicinity of Saint Michael. His report upon the birds observed by him during that period remains the most important ornithological publication ever issued relative to Alaska.

Miss Ellen Scripps, of La Jolla, California, is giving the San Diego Society of Natural History two thousand dollars per month, to be continued for two years, to enable the Society to move into larger quarters and to

build up its museum. Miss Scripps desires the educational side of museum work emphasized. The Board of Directors has accordingly appointed Carroll DeWilton Scott Curator of Education. Mr. Scott proposes to give a series of talks on natural history subjects in the schools of the city and county. The Museum will build a number of small cases containing birds, minerals, plants, etc., to loan to schools, the cases to be moved from school to school monthly—a sort of circulating museum—as part of the educational scheme. The research side of the museum work will be carried on also, and Mr. Frank Stephens will be identified with this branch. His plan is first of all to make a full study of the birds and other vertebrates of San Diego County, and he is already (June 29, 1920) embarking upon the necessary field work.

Field work is being carried on by the California Museum of Vertebrate Zoology this year as follows: Miss Annie M. Alexander and Miss Louise Kellogg, assisted by Mr. Halsted G. White, are searching eastern Oregon for both living and extinct vertebrates. Mr. Joseph Grinnell spent the month of April in the Death Valley region and Mr. Richard Hunt explored portions of the Mohave Desert; both were in company of the zoologist, Dr. Francis B. Sumner, of the Scripps Institution, San Diego.

Word comes of the death of William Dutcher at Chevy Chase, Maryland, on July 2. Mr. Dutcher had been a Fellow of the American Ornithologists' Union for 34 years, and for the past several years had been President of the National Association of Audubon Societies.

Dr. Alexander Wetmore, of the United States Biological Survey, left New York on May 29 to spend about one year in southern South America. He will make a special study of the local conditions under which certain North American species of birds (mainly shore birds) winter there. The results of his work will bear importantly upon the Migratory-bird Treaty Act, administration of which is vested in the Biological Survey.

The Canadian government has been issuing lately a series of small leaflets giving in popular style information regarding birds. Copies of these papers will be sent upon request, by applying to the Commissioner of Dominion Parks, Department of the Interior, Ottawa. The subject matter is mainly relative to species affected by the Migratory Birds Convention Act, apparently as part of a plan for the more general diffusion of knowledge in regard to such birds. Some of the papers are in English, some in French; evidently the naturalists responsible are in earnest in their endeavors to bring home to all the general information that is so important in building up a popular sentiment of approval, without which it is difficult to enforce any regulation. Some recent titles are: The Brant of the Atlantic Coast, by R. M. Anderson; Protection of Bird Neighbors, by Hoyes Lloyd; The Birds of a Manitoba Garden, by Norman Criddle.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

MARCH.—A regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, March 18, 1920, at 8 P. M. President Wright was in the chair and the following members were present: Mesdames Abernathy, Allen, Anderson, Bamford, Bridges, Griffin, Law, Nielson, Roe, Schlesinger, Thomson, Wythe; Messrs. Austin, Bell, Bryant, Cooper, Dixon, Evermann, Grinnell, Hunt, Law, McLean, Palmer, Storer, Swarth, and Wright; visitors: Mesdames Evermann, McLean, G. T. Roe, Swarth, Taylor; Messrs. Abernathy and Schlesinger. February minutes for the two divisions were read and the northern ones approved. Miss Genevieve Burk and Miss Lora Gertrude Rush were elected to membership, and names passed upon by the Southern Division in January and February were approved. Two new names were presented: Mr. T. F. M. Williamson of 525 Howard Place, Pasadena, by S. Herbert Jenks; and Dwight R. Disney, Rupert, Idaho, by H. W. Carriger.

Mr. R. H. Palmer of Palo Alto gave a talk on "Habits of Some of our Common Birds", after which seasonal observations were reported by members present. Mr. Swarth suggested that since certain members of the club are receiving ornithological literature which does not reach all, short reports of such literature be added to the monthly program. A motion embodying this suggestion was made by Dr. Bryant, seconded by Mr. Storer, and unanimously adopted by vote of the club. Adjourned.—AMELIA S. ALLEN, *Secretary.*

APRIL.—The Northern Division of the Cooper Ornithological Club met at the Museum of Vertebrate Zoology, University of California, April 15, at 8 P. M. President Wright presided and those in attendance were Mesdames Allen, Bridges, Grinnell, Head, Kelly, Law, Mead, Schlesinger, Thomson, and Wythe; Messrs. Austin, Bell, Carriger, Cooper, Lastreto, Law, Swarth, White,

and Wright; visitors: Miss Kellogg, Mrs. Etcheverry, Mrs. Neugass, Mrs. Taylor, Mrs. Thomson, Mrs. White, and Mr. Kelly. The minutes for the March meeting were read and approved and the March report of the Southern Division was read. Mr. T. F. M. Williamson and Mr. Dwight R. Disney were elected to membership, and Mr. W. H. Workman and Harry H. Johnson, elected by the Southern Division, were approved. Correspondence regarding the Seattle meeting was read, and a motion was carried to the effect that arrangements for the ornithological meeting be made by a committee composed of members of the Club who will be present at the meeting, together with the secretary. On motion of Mr. Lastreto a committee was appointed to report at the next meeting as to what support the club could offer toward encouraging the completion of "The Birds of California". Messrs. Law, Swarth, and Evermann were appointed by the chair.

The sudden death of Mr. Frank S. Daggett, Director of the Museum of History, Science, and Art, in Los Angeles, was reported by Mr. Swarth, and the following resolutions were ordered spread upon the minutes and forwarded to the members of Mr. Daggett's family, on the motion proposed by H. S. Swarth, and seconded by Barton W. Evermann.

In the death of Mr. Frank S. Daggett ornithology has lost an enthusiastic votary. The Cooper Ornithological Club has lost a member who had whole-heartedly aided and supported the society by every means in his power almost from its inception; who had acted as vice-president and as president of the Southern Division for many years; and who, in thus giving of his time and in many other ways, was an important factor in the development of the Club. Mr. Daggett's kindly personality was such as to have attracted to him a circle of friends by whom his loss will be keenly felt. His absence leaves a noticeable gap in the ranks of the Club.

Therefore, be it resolved that we, the members of the Cooper Ornithological Club, deplore his death as a loss to ornithology and especially so to this Club, and that the condolences of the Club are hereby extended to his bereaved family.

Reports of recent literature relating to Ornithology given by Mr. Storer and Mr. Swarth included the Journal of Comparative Oology, and Bulletin 794 of the Department of Agriculture on the food of water birds.

The program of the evening consisted of a talk by Mr. Tracy I. Storer, entitled "Observations on the Birds of the Campus". Mr. Storer brought up to date the observations incorporated by Dr. Grinnell in his article entitled, "A Second List of the Birds of the Berkeley Campus", adding two winter visitants and ten transients to the list of 1914 and presenting as far as available the average of migration dates thus far recorded. Adjourned.—Amelia S. Allen, *Secretary.*

May.—The regular meeting of the Northern Division was held at the Museum of Vertebrate Zoology the evening of May 20, 1920. President Wright was in the chair, and thirty-two members and visitors were in attendance. Members: Mesdames Abernathy, Ames, Bamford, Bridges, Burk, Flinn, Flynn, Griffin, Grinnell, Schlesinger, and Thomson; Messrs. Cooper, Dixon, Emerson, Evermann, Grinnell, Loomis, McLean, Swarth and Wheeler. Visitors were: Mesdames Lueddemann, Potter, Roe, Thomson, Van Gaasbeck, Wheeler and Wintermute; Messrs. Abernathy, Bridges, Cheney, Elmore and Schlesinger.

The minutes of the April meeting of the Northern Division were read and approved. One new member was elected, Mrs. Mervyn Neugass. One name was proposed for election, Claude Gignoux, 73 Tunnel Road, Berkeley.

Business finished, the rest of the evening was devoted to "reports of the season", given by several of the members. Dr. Grinnell told of bird life as observed by him in April at various points in the Mojave Desert and Death Valley. He was followed by Dr. Evermann, with an account of the fluctuating fortunes of a Tri-colored Blackbird colony, by Mr. Dixon, on some birds of San Clemente Island, by Mr. Emerson, on bird life past and present at Hayward, and by Mr. Wheeler, on birds he had just seen on the desert of southern Arizona. The discussion then became general, and minor items of interest were contributed by many of those present. Adjourned.—H. S. Swarth, *Secretary, pro tem.*

June—The regular meeting of the Northern Division was held at the Museum of Vertebrate Zoology the evening of June 17. In the absence of president and vice-president, Mr. Lastreto acted as presiding officer. Thirty-nine members and visitors were present as follows: Members: Mesdames Ayer, Blake, Bridges, Grinnell, Kelly, Kibbe, Meade, Neugass, Newhall, Roe, Schlesinger, Margaret W. Wythe; Messrs. Bassett, Bell, Carriger, Dixon, Emerson, Grinnell, Hunt, Lastreto, McLean, Ray, Swarth. Visitors: Mesdames Bassett, Cheney, Clark, Dixon, Grant, Hornig, Charlotte Nash, Hester Nash, Alice B. Wythe; Messrs. Blake, Bridges, Cheney, Clark, Elmore, Kelly, Roe.

The minutes of the May meeting were

read and approved, followed by the reading of the April minutes of the Southern Division. One new member was elected, Mr. Claude Gignoux, Berkeley. Names were presented for future action as follows: Mr. A. C. Maxson, Longmont, Colorado, proposed by W. L. Burnett; Mr. Ray B. Lyon, Redwood City, by Chase Littlejohn; Mr. E. S. Cheney, Oakland, by W. Otto Emerson; Mr. L. A. Elmore, Berkeley, by H. S. Swarth.

There was no further business, and the club then listened to a paper by Mr. Frank N. Bassett, a member of the San Francisco Symphony Orchestra, on "The Musical Element in Birds' Voices". This was followed by an hour of general discussion. Adjourned. —H. S. SWARTH, *Secretary, pro tem.*

SOUTHERN DIVISION

APRIL.—Regular monthly meeting of the Southern Division, Cooper Ornithological Club, was held at 8:00 P. M., on the 29th, at the Southwest Museum, as guests of the Bird Lover's Club. President Miller officiated, with other members present as follows: Mrs. Myers, Miss Miller, and Messrs. Appleton, Brouse, Brown, Calder, Dickey, Edwards, Hanaford, Huey, Little, Nokes, Pierce, Reis, Rich, J. Robertson, Ross, Stivers, Stormont, Van Rossem, Warner and Wyman. Minutes of the March meeting were read and approved. On motion the Secretary was instructed to cast an electing vote for the candidates whose names were presented at the March meeting. New applicants were: Dr. John Comstock, Los Angeles, by C. O. Esterly; Ronald M. Stewart, Comox, B. C., by Allan Brooks; Chas. W. Tindall, 912 No. Noland St., Independence, Mo., by Harry Harris; Frank H. Hands, Dos Cabezos, Ariz., by J. E. Law. Mr. Chambers sponsored George I. Carpenter, 129 Dean St., Brooklyn, N. Y.; Albert E. Davies, 1327 Grove St., Berkeley; Ethel Katherine Crum, Grass Valley; Robert L. Coffin, Amherst, Mass.; and Alva Howard Felger, North Side High School, Denver, Colorado.

The following resolutions were submitted by Mr. Robertson, who had been appointed a committee of one for the purpose.

WHEREAS, The Creator, in his infinite wisdom, has seen fit to call our beloved friend and fellow member, Dr. Frank S. Daggett, to the world beyond, and in so doing leaves a place vacant in the hearts of his innumerable friends and admirers; and

WHEREAS, the Cooper Ornithological Club of which he has been a member for many years, and of which he was a staunch supporter, has lost in his demise an earnest and loyal friend; and

WHEREAS, each member of this Club honored with his acquaintance, feels a great personal loss in the death of Dr. Daggett, who, with his kindly efforts, and in his quiet, courteous manner, has assisted many to solve difficulties which at the time seemed insurmountable; and

WHEREAS, the community in which he lived has lost a valuable and trusted citizen, one who was beloved by all with whom he came in contact, one who was honored with its full confidence, and one who in the performance of his duties was careful, kindly and just;

NOW, THEREFORE, BE IT RESOLVED, by the Southern Division of the Cooper Ornithological Club that, in the untimely demise of Dr. Daggett, the community has lost a useful and an honored citizen, the Science of Ornithology a careful, exact and devoted student, and the Cooper Ornithological Club a loyal and devoted member; and

BE IT FURTHER RESOLVED, that this Resolution be spread upon the minutes of this meeting, and a copy be transmitted to the bereaved family.

This, with a similar resolution from the Northern Division, was unanimously adopted by a standing vote.

The Business Managers' report, analyzed by Mr. Chambers, showed a satisfactory financial condition; and on motion by Dr. Warmer, seconded by Mr. Dickey, the report was accepted and the thanks of the Club tendered to the Business Managers for their efficient administration of Club business. On motion by Dr. Rich, the Club ratified the action of the Secretary in signing, for the Club, a petition of the Audubon Society for the appointment of a deputy game warden for San Fernando Valley.

Mrs. Myers read a letter from T. Gilbert Pearson, relative to a bill known as "House Bill No. 12446", intended to permit private exploitation of a portion of Yellowstone National Park, and moved that the Secretary be instructed to address a letter of protest to all Senators and Congressmen from California. Motion carried.

Formal business over, various subjects of interest were brought up and discussed. Mr. Chambers spoke of a movement to set aside a large area of marsh, on the Alamo River, as a permanent game refuge. Miss Miller, President of the Bird Lover's Club, sent out an "S. O. S." for help in classifying a collection of bird-skins recently donated to the Southwest Museum. Various members mentioned recent experiences, one reporting the discovery of the Bendire Thrasher nesting in California. A concensus of opinion among the members was that the present meeting had been a profitable one, and that closer relations between bird organizations are desirable. Adjourned.—L. E. WYMAN, *Secretary.*

For Sale, Exchange and Want Column.—**Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. Lee Chambers, *Eagle Rock, Los Angeles County, California.***

Auks Wanted—I have a nearly complete set, but lack the first two volumes, 1884 and 1885. Also lack Bulletin Nuttall Ornithological Club, vol. 1, no. 2; vol. 2, no. 3. If you have any of the above to spare, please let me know about it. R. C. McGregor, *Bureau of Science, Manila, P. I.*

Central American Bird Skins—I will be pleased to correspond with anyone who might be interested in general collections from Guatemala and Costa Rica, and later on from Panama. The quality of this material cannot be surpassed.—Austin P. Smith, *care of American Consulate, San Jose, Costa Rica.*

Bird Books For Sale—Land Birds N. A., Baird, Brewer and Ridgway, 3 vols.; Life Hist. N. Am. Birds, Bendire, 2 vols.; Cassell's Book of Birds (Brehm), 4 vols., colored ills.; Key to N. Am. Birds (Coues), 1st ed., 1 vol.; 5th ed., 2 vols.; Birds of the Northwest, Coues; Field Ornithology, Coues; Birds' Nesting, Ingersoll, 1 vol.; The Bird, Michelet, 1 vol.; Manual of Ornithology of United States and Canada, Nuttall, 1 vol.; Birds of Pennsylvania, B. H. Warren, 1 vol.; North American Birds' Eggs, Reed, 1 vol.; Birds of N. and Mid. America, Ridgway, 4 vols.; Ornithology and Oology of New England, Samuels, 1st ed., 1 vol.; Birds of North America, Studer, 1 vol., colored plates. All in good condition except Michelet and Samuels. The lot $100 cash. Offers for separate items considered.—John J. Boyce, *1202 Hampel St., Oakland, Calif.*

Wanted—Assistant Curator in the Department of Ornithology, California Academy of Sciences, Golden Gate Park, San Francisco, California. Applicant must have working knowledge of North American birds, be able to collect and prepare specimens as study skins and be thoroughly interested in the subject. Initial salary $100.00 per month, increase after trial if satisfactory, with expenses paid while in the field. Apply to Joseph Mailliard, *Curator.*

Wanted—Will pay cash or exchange for Auk; vol. 5, no. 4; American Ornithology, vol. 6, nos. 1, 2, 3, 4, 6, 7; Ornithologist and Oologist, vols. 6 and 7, complete, vol. 11, nos. 2, 3, 4, 5, 6, 7, 8, 10, 11; vol. 12, nos. 8, 9, 10, 11; Maynard's Birds of Eastern North America; McIlwraith's Birds of Ontaria, 2nd edition.—H. H. Johnson, *Pittsfield, Maine.*

Wanted—North American Fauna, nos. 4, 5, 7, 16, 17, 19, 20, 21, 25, 27, 28, 30. For any of these I will pay a reasonable price.—Alex. Walker, *Blaine, Oregon.*

Wanted—Ridgway's "Birds of North and Middle America", vols. 2 and 3; paper covers preferred; must be in good condition. Will pay reasonable cash price.—F. Seymour Hersey, *Taunton, Mass.*

Wanted—North American Fauna, nos. 4, 5, 7, 11, 14, 15, 16, 17, 20, 21, 23, 25, 27, 28, 29.—Laurence Huey, *1703 Clay Ave., San Diego, Calif.*

I want odd volumes of Proceedings of the Biological Society of Washington.—W. Lee Chambers, *Eagle Rock, Los Angeles, Calif.*

Wanted—The Auk, vol. VII, 2, 4; IX, 2, 4; XI, 1, 2; XVI, 1, 4; XVIII, all; XXII, 2, 3, 4; XXIII, 2, 3; XXIV, 3, 4; XXVIII, 2, 3; XXX, 4. Reports of Chief, Bureau of Biological Survey, for years ending June 30, 1893, 1894, 1895, 1900, 1902, 1914, 1917. Cope, E. D., 1889. Batrachia of North America, Bull. 34, U. S. National Museum.—Tracy I. Storer, *Museum of Vertebrate Zoology, University of California, Berkeley, Calif.*

OCT 4 1920

THE CONDOR

A Magazine of Western Ornithology

Volume XXII September-October, 1920 Number 5

COOPER ORNITHOLOGICAL CLUB

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THE PINK-SIDED JUNCO

By M. P. SKINNER

THE PINK-SIDED JUNCO (*Junco hyemalis mearnsi*) is the bird that is by far the most frequently met with in the forests of Yellowstone Park. Sometimes these Juncos are found where the trees stand thick and dark, but more often they are about the small openings that are scattered through the woods. Especially is this true of nesting sites, most that I have found having been situated in the open spaces. The Pink-sided Junco is pre-eminently a road-loving bird, being much more numerous along highways than in the unbroken forests; throughout a day's trip in summer these little birds are continually flying up from the road to the bordering pines. When they first come in the spring they frequent lower elevations, preferably the vicinity of scattered firs and cedars or at least brushy places. In summer they seek the Park plateau, up to the very tops of the highest mountains; late in September they have been found within a hundred feet of the summit of Mount Sheridan. They are found in the groves of white-bark pine (*Pinus albicaulis*) (on Mount Washburn and other high mountains) and limber pine (*Pinus flexilis*), in spruce and balsam, in fir and cedar, and at times in quaking asp, willows, birches, alders, and even sage brush. On the whole, the lodgepole forests seem the preferred habitat. On being alarmed they are quite apt to dart into some handy pile of brush. Juncos are seen on the beaches of the larger lakes, Yellowstone, Lewis and Shoshone, or in the alders along shore. During cold storms, they quickly find shelter under juniper shrubs, upturned tree roots, and over-hanging banks; or they come about barns and horses picketed in sheltered spots. Once I found them seeking night-roosts in lodgepole pines on a sheltered flat.

Frequenting, as they do, the Mammoth formation, especially early in the season, and being ground-loving birds anyway, it is not strange that they often seek shelter in the gas caves and fall victims there. Indeed, this species is the one that furnishes the most victims to the suffocating gas, and in former years large numbers were killed. A wire netting is now placed over the mouths of these caves and the destruction from this cause is much less. The Juncos are numerous about the geyser basins, but I do not think the hot water itself has any attraction for them; it may be that their food of vegetable and insect nature is stimulated thereby.

The Pink-sided Junco is our common breeding junco; others (as *montanus* and *connectens*) pass through on migration. Our Juncos are very quick, sprightly and restless in their ways, hopping about on the ground and keeping up an almost continual cheeping in loud tones, except when busy with parental duties or flitting through the pines with a flash of the white feathers in their tails. On the ground they move along with quick little jerks of the wings and tail at each hop. Sometimes they scuttle out of the road and under the nearby trees at one's approach. Usually, though, they are very tame and can be observed at close range, sometimes remaining unconcerned within ten feet of one. They even come hopping into our tents and they may stay for some time; at our camp at the Canyon, they were hopping contentedly about most of the time. They are quite fearless of the Red-tail and Swainson hawks, even when those big birds are screaming in the same tree within a few feet of them.

Pink-sided Juncos are very sociable little birds, associating in spring and fall with Mountain Chickadees, Nuthatches, Tree Sparrows, and with their cousins, the Intermediate Juncos, in the evergreens. At other times they may be seen with Pine Siskins, White-crowned Sparrows, Chipping Sparrows, Kinglets, Audubon Warblers and Townsend Solitaires. They are often with the Robins and Bluebirds, with Vesper Sparrows in spring on the sage flats, and even with Horned Larks and Leucosticte on the bare spots. In October they accompany many other species to the barns, for the oats that are dropped there. I have seen a Northern Shrike catch one or two during the spring before the shrikes go north. The Pink-sided Junco usually progresses by a series of short flights from tree to tree, or from bush to bush. The flight has a peculiar, halting catch to it, due, no doubt, to the short and fast moving wings.

These are enthusiastic little songsters from about April 14 to July 30, with the height of the song season about the first of May. They commence at an early hour, sometimes before 5 A. M. On cold, wet mornings they are the first species to start the chorus. The song is a tingling little warble uttered perhaps, from a quaking asp, eighteen feet or so from the ground, or from a lodgepole pine or a fir: *Ting'le, ting'le, ting'le,* rapidly repeated about six times. The singer perches like a song sparrow, with head thrown back and chest out, but keeping quite motionless. Rain does not stop their singing, but the songs go on as cheerily as ever. I have never observed them singing while in flight, but I have seen a bird begin singing just as soon as it alighted. They were singing at an altitude of 8500 feet on April 16, and at 8800 feet on June 11, where there was from one to three feet of snow all about. I have had them come about camp when I was cooking, especially in September and October, chirping most sociably. Such call-notes are usually low-pitched, but once at least, one came flying into a lodgepole pine under which I was packing, and made such a racket I thought it was a squirrel.

When the Juncos first arrive in the spring they appear at low elevations but soon move higher. Even so, they are often so early that they have to seek shelter about barns and other buildings. In March they are seen generally on the bare spots of ground under limber pines and Douglas firs. Sometimes they seek a roost under some convenient shed, and they even find their way into basements of houses, where they may be unable to find their way out again. The late storms of spring catch the Juncos, but they are adept at seeking shelter about the barns, under sheds, and in potato cellars; after the cold they are bright and lively, but not chirping much, and very busy hunting for possible

waste oats. At other times they take refuge in lodgepole pines under bunches of foliage covered by a canopy of snow, behind the snow caught on an overturned root, under firs, and even under sage bushes if nothing better offers. A little later a snow storm may drive them down from the mountains to the bare ground at lower levels. The middle of May finds these true mountaineers at 9000 feet altitude, and they are at timber line, 9500 feet, a month later. The first arrivals appear suddenly in March, and they gradually increase in number until June 1. A month later and until August 15, the number is increased again by the addition of young birds. Departure begins in September, with the bulk of the birds leaving between the 5th and the 30th. They are then in small flocks of four to eight birds; these small gatherings coalesce into flocks of sixty-five or more individuals in openings in the lodgepole forests where food is plentiful. Toward the end of September, those hardier birds that have still lingered move down to lower elevations about Tower Falls and Mammoth, and even into the sage-brush areas, although never far from the lowest firs and pines; and they may remain until the middle of October, or even November, before being driven out finally.

In the spring they pick up grain and weed seed on bare slopes, and come about barns with the Cassin Purple Finches for dropped oats, although they are more liable to do the latter in the fall. Once I noted a small group flitting about the top of a fir heavy with cones, but I thought they were catching insects rather than working on the cones. At one point near Mammoth there is a shallow stream of water trickling down from a hot spring above. Here the Juncos come to the little basins that catch this cooled water, to drink and bathe with Song Sparrows, Western Wood Pewees, and Rocky Mountain Nuthatches.

The Pink-sided Juncos begin pairing off early in May and by the 25th all are provided with partners. During this season, and also all through the summer, the male manages to show off his white tail feathers more, I believe, than at other seasons. Once I found a pair hopping about the roots of a half fallen, dead lodgepole pine on the bank of Cache Creek, as if looking for a nesting site, but I never had the chance to go back again to find out. On June 23 I found a nest, built of grasses and lined with finer material, placed seven feet from the ground on the back wall of a shallow formation cave at Mammoth, 6300 feet elevation. It held four buffy eggs blotched with brown. The mother was killed in a nearby gas vent soon after. On July 16, I found a nest beside the Grebe Lake trail, at 8000 feet altitude. It was under a little bunch of blueberries in the lodgepole forest, made of pine needles and vegetable stems, and contained four greenish eggs slightly speckled with brown. On the same day another nest was found on the edge of a rill of water just above Grebe Lake, at 8000 feet elevation. This was similar to the last described in every way except that this second nest was out in the open, under a tall cluster of lupines. On July 27 I found a nest under a tuft of partly dried grass on a low, dry meadow at 7700 feet altitude. It was well made of fine grasses and contained three greenish-white eggs marked with small brown spots, especially numerous at the larger end. The mother seemed timid and slow to return to her nest. The next morning I heard the male singing nearby.

On August 3, near Mariposa Lake at 8500 feet altitude, a female fluttered away, with pretended broken wing, from her nest in a hole in the ground under a bunch of lupines, about sixty feet from the nearest tree or shrub. The

hole was lined with vegetable fibers and contained three babies, just hatched and with eyes not yet opened. The next day I found them covered with a thin growth of long black down. The mother kept to the nest most of the time, but I observed the father hunting through the grass in the vicinity more than once. The babies remained in the nest about two weeks.

Young birds have been seen to fly as early as the end of June at the lower elevations; and as late as August 12 I have found them in the same stage at higher altitudes. I have not been able to determine whether the mountaineers are second broods or not. Regularly, as early as the middle of August, the Juncos are in small flocks.

Yellowstone Park, Wyoming, June 28, 1920.

THE FUNCTION OF POWDER DOWNS IN HERONS

By ALEXANDER WETMORE

WITH TWO PHOTOS

THE curious fluffy, greasy tracts of feathers found in patches on the breast and pelvic region in herons and occurring at random in various other groups of birds, even in the Passeriform order, have been the subject of considerable speculation and comment. Some time ago I had opportunity to study their development in the young of a few species of herons and from these observations was able to settle definitely their function so far as concerns this group of birds at least. Observations were made first while rearing a young Great Blue Heron (*Ardea h. treganzai*), and were checked and verified in the young of the Snowy Heron (*Egretta c. candidissima*), Black-crowned Night Heron (*Nycticorax n. naevius*), and Bittern (*Botaurus lentiginosus*). It is interesting to note that my findings verify a possible function of these tracts as suggested by Newton and Gadow (Dictionary of Birds, 1896, p. 654). In the young Great Blue Heron powder down tracts produced functional feathers soon after the contour and flight feathers had burst their sheaths and the bird began to preen and care for its plumage. The heron in question had been taken from the nest while still too young to know fear of man, and as I reared it by hand it became devoted to me, though fierce and truculent toward all others. As its plumage developed I noted that the bird constantly rubbed the bill in the powder downs, and on examination found that the heron was utilizing the greasy, powdery substance given off by the tracts to dress and oil the contour feathers. The bill was worked in among the powder downs until a small amount of the exuviae had gathered at the tips of the mandibles and then contour or wing feathers were pulled rapidly through the bill, anointing them with this oily substance. At once return was made to the powder downs after which other feathers were treated in turn until the whole of the body and wing plumage had been properly dressed. I had no difficulty in observing the process as, when permitted, the heron until practically grown delighted in standing upon my knee as I sat in a chair. I was able to place my fingers in

beside the tip of the bill, in the powder downs, to feel the mandibles gently nibbling at the downy feathers and then to see the bill withdrawn with its sides covered with the grayish powder. Following this I observed as it was passed over other feathers. This process was repeated daily whenever I cared to see it. At the same time I discovered by examination that the uropygial gland, the usual source of oil for feathers seemed undeveloped and remained in a non-functional condition until the heron was practically grown. The bird in early life paid no attention to this gland but worked in either pelvic or pectoral down patches. The actual development of the oil gland I did not observe as the heron at this stage became so vicious toward others that I was forced to discourage its tameness until finally it left the laboratory.

When attention was attracted to this peculiarity in the Great Blue Heron I took occasion to examine other young herons and found a similar condition existing in Snowy Herons, Black-crowned Night Herons and Bitterns. The accompanying illustration (fig. 36) shows well the relative size of the powder down tracts and the non-functional oil gland in a young Great Blue Heron (*A. h. treganzai*) about two-thirds grown. The oil gland is the small rounded object at one side between the two pelvic tracts. In another cut (fig. 37) the young Great Blue Heron is shown securing the greasy material from the powder down patch on one side of the breast.

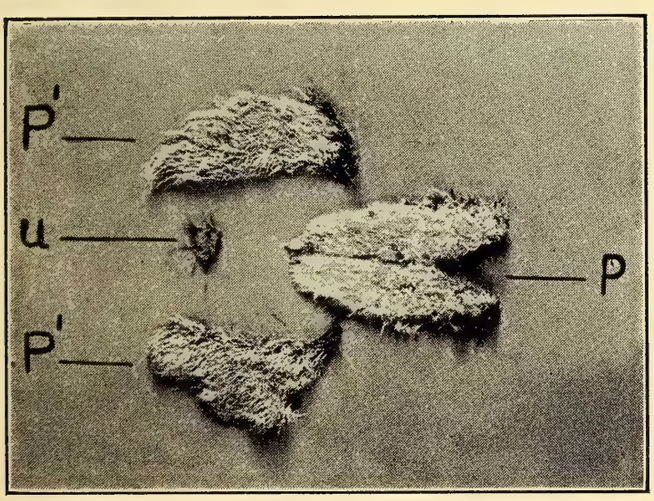

Fig. 36. Powder down patches and uropygial gland from Great Blue Heron about two-thirds grown, dissected from fresh specimen to show relative size. *P* pectoral powder down tracts; *P*[1] pelvic tracts; *U* developing uropygial gland (not yet functional).

Parenthetically I may add that although on various occasions I examined powder down tracts in living and in dead herons I was unable to observe that these tracts were luminous, in spite of numerous records on the part of others, to the contrary.

Since making these notes on powder downs it has been my intention to go farther into this subject and to study the development of these feathers and also of the oil gland. As a matter of fact powder downs are so little understood that ordinary definitions of them in text-books are vague and uncertain and their recognition in certain groups of birds is at times difficult. Where these downs are not segregated in definite tracts but are diffused through the pterylae it is possible, without careful attention, to confuse them with other feathers that have just begun to break their sheaths when in process of development. Similarity in function between powder downs and oil gland has suggested that these two organs may be homologous in origin. Should it prove that the powder down tract is a primitive arrangement from which the more complicated oil gland has developed then we may have a ready explanation for the occurrence of powder downs apparently at random in such diverse groups as Tinamous, the Whale-headed Stork, the Kagu, Sun Bittern, Mesite, herons and bitterns, the diurnal birds of prey (where they may be found in

many other species than currently recognized), parrots, Frogmouths, Potoos, Leptosoma and lastly in the Wood Swallows among the passerines. The structure of the oil gland with its numerous coiled tubes secreting fluid into a common chamber which in turn discharges the oil through one or many orifices

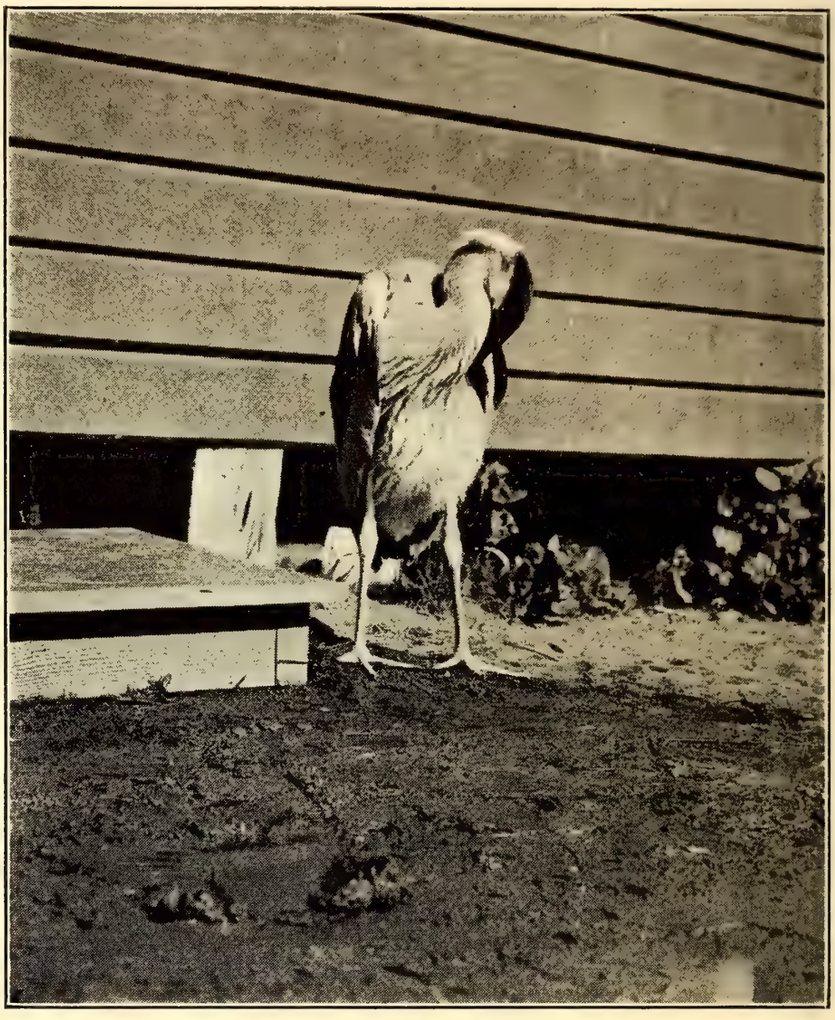

Fig. 37. Immature Great Blue Heron oiling mandibles by working them in powder down patches preparatory to preening contour feathers.

to the surface might suggest an origin through the amalgamation of a number of separate tubes opening separately. All this, however, is pure hypothesis that may be verified or overthrown by careful study of the embryology of these structures.

Biological Survey, Washington, D. C., May 26, 1920.

NOTES ON A FEW BIRDS OF THE GRAND CANYON, ARIZONA

By MELICENT HUMASON LEE

IT IS six o'clock in the morning, daylight saving time, on the fourth day of June, in the Grand Canyon of Arizona. I am sitting under a red-bud tree near a little pool beside Bright Angel Trail, a short distance from the Indian Gardens. I am waiting for the hummingbirds to bathe in the dawn-cool water.

The ground is cold as a marble pavement. The abundant leaves of the red-bud bear too intense a shade for a pre-sunlit morning; the dense clusters of seedpods hang luxuriantly from the twigs. Across the path, at the base of the bank, the Indian paint brush glows between the softer-toned blossoms of the mallow, and the yellow plume of the Stanleya, to which the hummingbirds have not yet darted. In a dark, little niche, overhung by grape-vines, one beautiful, solitary thistle poppy blooms.

Suddenly, I hear a vibrant hum in the air, mingled with excited twitterings, and shrill squeaks. Buzz, buzz, buz-z-z ..... over the willow tips, over the tules, over the graceful stems of the tall, waxy-flowered dogbane. Then, I catch the gleam of two little sprites of the air—Black-chinned Hummingbirds (*Archilochus alexandri*), chasing one another with miraculous speed. The combat ceases as abruptly as it commenced. The contestants separate. One retires to a grape-vine swing and sits there quietly, occasionally shaking his ridiculous tail feathers; the other descends to the pool. He dips his little breast into the shallow water; he rises into the air; he drops again by gentle stages, twirling around after each descent, and squeaking ominously; he dips again, and submerging his tiny body to the chin, he trails through the pool like a fiery ship of green and violet.

While he perches on a horizontal stem of dog-bane to dry his feathers, I gaze about me in quest of other birds. A male Black-headed Grosbeak (*Zamelodia melanocephala*) is softly singing on a willow bough which overhangs the pool, while his mate is surreptitiously collecting a bundle of fiber from a dried plant on the opposite bank. Dark shapes flit constantly about the latter, and, by the aid of my field-glasses, I can discern several pairs of Desert Sparrows (*Amphispiza bilineata deserticola*) apparently nesting in the cactus and other growth on the hillside. The Black-throats' song, strung upon three tones, is rather thin and wiry, but especially suited to their environment. Far above these little sparrows, almost at the foot of the massive wall of rock which towers beyond them, several wild burros, "escaped from cultivation", are leisurely grazing. Almost indistinguishable are they, in their coats of gray, from the boulders and brush amongst which they slowly move.

As I watch them, an insect-like trill floats to me from a ledge of rock, lower down the hill-side, and, by carefully focusing my glasses upon the spot, I can descry the Rock Wren (*Salpinctes obsoletus*), standing by a clump of cactus, and jerking her body up and down by what seems to be a well-managed system of wires. Very evidently, she is nesting in the fissure of rock, as she returns again and again to that particular spot, while her mate calls to her from some hidden point of vantage nearby. A rock squirrel runs along a ledge above her, sits up meditatively, drops again, and scampers into a crevice. And yet the sun has not risen behind me, over that austere barrier of rock. The air is still cold, and not a single lizard has stirred.

Suddenly, a big shape swings over the pool, and, directly before my eyes, a Cooper Hawk (*Accipiter cooperi*) perches on a willow bough. He twists his head in every direction, occasionally opening and snapping his beak; he suddenly wheels about, displaying his satiny back and the four dark bands of his tail feathers; then, he plunges into the tules.

But what is that long-continued song that never ceases—that song which has been so predominant that it has simply become a background for the intermittent calls of other birds? It is the jumble of the Long-tailed Chat (*Icteria virens longicauda*), whose yellow breast gleams through the willow thicket. For hours I have listened to this bird, in the mornings and evenings when I have lingered by this pool, and never have I detected a single strain the motif of which seemed to have been borrowed from the song of another bird. Mimic he may be at times, but in the early part of June, from dawn to dawn—for the voice of the chat continues throughout the night—he mimics none of his fellow birds: the rock wren, the desert sparrow, the grosbeak, and several other species, birds whose very characteristics are so dis-similar to his that their resultant musical expressions are in a category by themselves. Now the subject of my discussion flies to another willow, flies low, with a silent, hawk-like glide, which soon changes to a flapping, awkward motion, accompanied by a loud beating of wings. In the rare intervals which break his spun-out melody, I hear a cheerful little song behind me, which is so warbler-like in character, that without difficulty I can transport myself, by closing my eyes, to the cedar-spired hill slopes of New England, in the month of May. Rising, I skirt the pool, and enter an open area bordering the east side of the trail. A dense, luxuriant tangle of low willow and high dog-bane grows upon this mesa, which lies between the pool and the immense pale vermilion wall of granite over which scintillates the first faint glimmer of the sun. As well as I may, I advance through the thick, interwoven growth, the Chat following me, darting from willow to willow. Suddenly, I spy a tiny, dark gray bird, an atom of a bird, with miniature half-inch tail, clinging firmly to a slender dog-bane stalk, while near him hover the male and female Lazuli Bunting (*Passerina amoena*). I could pluck the little bird from the stem as easily as I could pick a plum, but instead, I quietly steal away, only too glad to discover that bird-nesting runs along as cozily and serenely in the Grand Canyon as in an old-fashioned garden.

I return to the pool just in time to see a pair of dainty little Arkansas Goldfinches (*Astragalinus psaltria*), drinking at the edge. These friendly birds do not object to my presence, but satisfy their thirst before flitting away. Scarcely have they flown, when I notice a female Black-chinned Hummingbird quivering before a loose flap of bark on a dead willow, and extricating from under the flap, threads of the inner fiber, a process which she repeats every three minutes, spinning away after each rapid task over a particular air-trail which probably leads to the recurved tip of a willow bough, on which a nest is in construction. Black-chins adapt themselves readily to their environment, and do not insist upon sycamore down for cradling their young, when sycamores are not available.

But now the sun has appeared over the red wall, the birds have retreated to cool coverts of willow and grape-vine, and only the irrepressible staccato ditty of the Chat permeates the silence of the glade.

El Cajon, California, April 10, 1920.

NEW AND INTERESTING RECORDS OF PRIBILOF ISLAND BIRDS

By G. DALLAS HANNA

DURING the summer season of 1919 not many new records of birds were secured on the Pribilof Islands. This was not due to any supposed scarcity of material from which the records could have been made, but was the result of a lack of opportunity to make any systematic observations or collections. On several occasions shore birds were noted which could not be identified with any previously recorded species, but a combination of circumstances in every case prevented the securing of specimens. On three separate days warblers were seen, and wagtails were observed once. In each of these groups there are excellent opportunities to secure new records both for the Islands and for North America. And this would add very materially to the knowledge of migration of many species.

Field identifications are not ordinarily believed to be trustworthy for records in this locality, where there is so much mixing of the American and Asiatic avifaunas. A firearm should be carried constantly by a person who expects to get any considerable number of the valuable specimens which appear. Unfortunately this cannot always be done. Although I have been instrumental in the recording of some thirty-eight species from the Islands for the first time, including six new to North America, I firmly believe that fully twice that number would have been secured had I been able to go about my regular duty "prepared" for birds.

These little Pribilof Islands, mere atoms in a storm swept sea, form the land home for myriads of birds. But in addition to this they are the resting place for migrants and wanderers from the entire northern part of the earth. Some most unexpected visitors have been found, as a casual inspection of the complete list will show. They have come from Alaska, Kamchatka, Siberia, Japan, and the northern part of Europe. Whether there is any law which governs these extensive wanderings or not can only be determined by continued and careful collecting, which no one thus far has been able to undertake.

Complete lists of the breeding birds of each of the five islands of the group are offered herewith for the first time. From this it is hoped changes which occur from year to year may be noted. Undoubtedly additions will come in the future; the islands are very young.

Limnocryptes gallinula. European Jack-snipe. Some time during the spring of 1919, probably in April, a native on St. Paul Island secured one of these birds and very kindly kept the skin for me until my arrival. The identification was made by Mr. Joseph Mailliard of the California Academy of Sciences. This is a new record for the Pribilof Islands and for North America.

Macrorhamphus griseus scolopaceus. Long-billed Dowitcher. A female was taken on St. Paul Island, September 18, 1919. It, the only one seen, was secured near the Salt Lagoon.

Passerella iliaca unalaschcensis. Shumagin Fox Sparrow. On May 20, 1919, a female fox sparrow was found at North East Point, St. Paul Island, feeding among the piles of drift wood. Mr. Mailliard is responsible for the identification.

The above two species are here recorded for the first time from the Pribilof Islands.

The unsuccessful attempts to introduce the Northern Raven (*Corvus corax principalis*) on the Pribilof Islands prior to 1867 were recorded by Elliott many years ago (A Monograph of the Seal-Islands of Alaska: Special Bulletin 176, U. S. Commission of Fish and Fisheries, 1882, pp. 126, 128). His statement is as follows: "Failure to Introduce Ravens.—The Russians tried the experiment of bringing up from Sitka and Oonalashka a number of ravens as scavengers, a number of years ago, and when they were very uncleanly in the village, in contrast with the practice of the present hour; they reasoned that they would —these ill-omened birds—be invaluable as health officers; but the *Corvidae* invariably, sooner or later, and within a very short time, took the first wind-train back to the mainland or the Aleutian islands; yet the natives say that if the birds had been young ones instead of old fellows they would have remained" (page 126). On page 128 the species is given the number "6" in his list and it is further stated that the experiment was tried several times.

The species has not reappeared in any of the lists of the birds of the islands, since it had not at any time reached them of its own accord. During January, 1919, heavy ice surrounded St. Paul Island, but the natives were able to get out from shore in their boats in the open leads for the excellent duck shooting. On one of these occasions three ravens were seen near Sea Lion Rock. One was shot and wounded but could not be secured. It is not considered to be good policy to encumber literature with important records from the Islands except when they are supported by actual specimens, but in this case identification could hardly be mistaken. The occurrence was confirmed by several reliable men to whom the species was well known when they were in Unalaska. So in this case it seems to be worth while to make the record without the specimen. The reason why ravens do not become established on the Pribilof Islands is one of the unsolved mysteries of Bering Sea. They live on St. Matthew Island to the north, the Aleutians to the south, Alaska to the east and Kamchatka to the west. Yet the Pribilofs are passed with their wonderful food supply in the shape of carcasses of fur seals. Can it be that the Islands are geologically too young?

Two Little Brown Cranes (*Grus canadensis*) were collected on St. Paul Island in May, 1919. This species occurs in small numbers regularly during migrations but the birds are rarely shot. The previous record was based on a single feather picked up on the tundra. The two birds secured had gormandised on maggots, picked up on the seal killing fields at North East Point.

A female Gadwall (*Chaulelasmus streperus*) was secured on St. Paul Island on May 20, 1919, from a flock of three at Half Way Point. It is the second occurrence of the species on the Islands.

An American Green-winged Teal (*Nettion carolinense*), male, was taken from a pair found May 26, 1919, near Lukanin Rookery. Also a male European Green-winged Teal (*Nettion crecca*) was taken on September 20, 1919. These records confirm the previous ones as to the regular occurrence of both species at this locality. It would be surprising if hybrids were not occasionally produced.

A female Polynesian Tattler (*Heteractitis brevipes*) was secured on St. Paul Island on September 17, 1919, near Kitovi Rookery. It makes the third specimen taken in North America. I had an opportunity to observe this bird

for awhile with two Wandering Tattlers in view at the time. The actions of the two species were practically the same. They feed very close to the sea on rocky shores and when disturbed fly lazily, rarely more than a hundred yards. The Wandering Tattlers on this occasion appeared perceptibly larger than the Polynesian, and the notes of the two were different. The latter uttered an irregular screech not of the same intensity or pitch, whereas the former gave its usual call, a series of six to ten individual notes uttered in the same pitch and rapid succession but each of shortening duration.

Pipits were seen and one, a female, was taken, on May 25, 1919. They were feeding on animal life about the beds of kelp which had washed ashore in the Village Cove. Until this time the species had only been seen during fall migration, but rather often then. The specimen collected appears to be the common *Anthus rubescens.*

A female Western Robin (*Planesticus migratorius propinquus*) was taken in the barn yard on St. Paul Island, September 15, 1919. I know of the occurrence of the species but twice previously. The first was observed in 1872. The specimens upon which the above records are based are deposited in the Museum of the California Academy of Sciences, San Francisco.

TABLE SHOWING THE BREEDING BIRDS OF THE SEVERAL ISLANDS OF THE PRIBILOF GROUP

	St. Paul Island	St. George Island	Otter Island[1]	Walrus Island	Sea Lion Rock
Lunda cirrhata	+	+	+	+	+
Fratercula corniculata	+	+	+	+	+
Phaleris psittacula	+	+	+	+	+
Æthia cristatella	+	+	+	+	.....
Æthia pusilla	+	+	+	+	+
Uria troille californica	+	+	+	+	.....
Uria lomvia arra	+	+	+	+	+
Rissa tridactyla pollicaris	+	+	+	+	+
Rissa brevirostris	+	+	+	+	.....
Larus hyperboreus	.....	.....	.....	+	.....
Larus glaucescens	.....	+	.....	+	+
Fulmarus rodgersi	+	+	+	.....	.....
Phalacrocorax urile	+	+	+	+	.....
Anas platyrhynchos	+[2]	.....	.....	.....	.....
Nettion [carolinense?]	+[2]	.....	.....	.....	.....
Harelda hyemalis	+	.....	.....	.....	.....
Phalaropus lobatus	+	+	.....	.....	.....
Arquatella maritima ptilocnemis	+	+	.....	.....	.....
Leucosticte griseonucha	+	+	+	.....	.....
Plectrophenax nivalis townsendi	+	+	.....	.....	.....
Calcarius lapponicus alascensis	+	+	+	.....	.....
Nannus alascensis	.....	+	+[3]	.....	.....

[1]I prefer to leave the question of the breeding of the Slaty-backed Gull on Otter Island open for future decision.
[2]Very rarely.
[3]In 1916, 1917 and 1918.

San Francisco, California, April 14, 1920.

NOTES ON SOME BIRDS OF INTERIOR ALASKA

By LEE RAYMOND DICE

WHILE serving as deputy warden in the Alaska Fisheries Service in 1911 and 1912 a small collection of birds was made in interior Alaska and a number of notes on distribution and habits secured. These notes are being published with the permission of the United States Bureau of Fisheries.

Most of the observations here recorded were taken in the vicinity of Fairbanks and of Tanana, and along the Kuskokwim River from the head of the North Fork to Bethel. A few records of specimens taken at Fairbanks by Chief Warden H. J. Christoffers are included. The specimens collected are preserved with the Biological Survey collection in the United States National Museum. Descriptions of the region and of the various vertebrate habitats in interior Alaska are being published in a separate paper (Dice, L. R., Univ. Mich., Mus. Zool., Occ. Papers, no. 85, 1920).

Thanks are due Dr. H. C. Oberholser for help in the identification of the specimens, and to Dr. Barton W. Evermann, then chief of the Alaska Fisheries Service, for his co-operation in the securing of the bird notes.

Colymbus holbœlli. Holboell Grebe. A number were seen on a lake near Lake Minchumina, June 23, 1912, a half-grown individual was shot on the lower Takotna River August 2, and several adults were noted on the lakes of the Kuskokwim-Yukon portage near Kaltshak, September 1-4, at which time their weird calls were often heard at night. A specimen was taken by H. J. Christoffers at the mouth of the Salcha River, forty miles east of Fairbanks, October 11, 1911.

Gavia stellata. Red-throated Loon. Frequently seen in the spring of 1912 on the Kuskokwim River at the head of the North Fork; the first pair appeared May 21. July 8 one was noted on the North Fork near the junction with the East Fork. They were abundant on the lower Takotna River on July 17 and August 2. August 8 an adult and seven well-grown young were seen diving in the Kuskokwim near Napaimut.

Larus hyperboreus. Glaucous Gull. Common on river-bars along the Kuskokwim, from McGrath on July 16, to below Kaltshak on August 15, 1912. One was killed by prospectors in black spruces near the head of the North Fork, December 15, 1911, after a severe storm, but its occurrence in this habitat is apparently accidental.

Larus brachyrhynchus. Short-billed Gull. Common on river-bars and rare at lake borders along the North Fork of the Kuskokwim River from May 13 down nearly to the East Fork, July 7, 1912. A number were seen May 9 on Lake Minchumina.

Larus philadelphia. Bonaparte Gull. A large number were seen on the mud-bars about Lake Minchumina, May 9, 1912.

Sterna paradisaea. Arctic Tern. An individual in white juvenile plumage flying over the Kuskokwim near the mouth of Swift River, was collected August 7, 1912.

Anas platyrhynchos. Mallard. Common on the water and on the shores of lakes and streams of the Kuskokwim Valley from the head of the North Fork to Bethel. This was the first species of duck to arrive in the spring of 1912; at the head of the North Fork small flocks arrived April 22 at a time when the ice was still in the river and when there were only a few spots of open water. A female with eight newly hatched ducklings was seen in this locality on a small lake and in sedges on June 9. Females and young swimming in the North Fork above the McKinley Fork were noted June 29. A female with five large young was seen above the East Fork, July 8. Nearly grown young were observed on the Takotna River, July 31. Several were seen August 5 about fifty miles below the mouth of the Takotna River. August 13 to 30 young and old in large flocks were abundant on the equisetum-covered mud-bars of the Kuskokwim from a short distance below Aniak to Bethel. A few were noted on lakes and sloughs of the Kuskokwim-Yukon portage, September 1.

Mareca americana. Baldpate. One was seen in a lake near Lake Minchumina, May 9, 1912, swimming in the open water outside the ice.

Nettion carolinense. Green-winged Teal. A number were noted in pairs near the head of the North Fork of the Kuskokwim in the spring of 1912, being first observed on May 4. One was seen July 3 in a lake at the junction with the McKinley Fork. August 13 to 30 they were numerous in flocks on the lower Kuskokwim from a short distance below Aniak to Bethel. August 31 to September 2 they were found on the lakes and sloughs of the Kuskokwim-Yukon portage. On September 4 they were abundant in flocks on Talbiksok Creek near Russian Mission-on-the-Yukon. A specimen was taken August 23, 1911, at Fairbanks by C. J. Roach. They feed chiefly in sedges and equisetum along the shores of lakes, rivers, and sloughs, and frequently come out on mud-bars or gravel-bars to rest.

Dafila acuta. Pintail. Numerous in the spring of 1912 in lakes and sloughs near the head of the North Fork of the Kuskokwim, where they were first noted on May 13. August 13 to 30 they were abundant on the equisetum-covered mud-bars of the lower Kuskokwim from a short distance below Aniak to Bethel, occurring in large flocks associated with mallards. In August, 1911, a hunter shot a complete albino near Fairbanks.

Marila, sp. Scaup. A pair of scaups were seen in a lake near the head of the North Fork of the Kuskokwim, June 9, 1912, but the species could not be determined.

Clangula clangula americana. Golden-eye. Common in the spring of 1912 in the lakes and streams near the head of the North Fork of the Kuskokwim. The first pair was seen May 7. No birds in male plumage were seen after June 1. June 20 to 30 groups of females and young were abundant on the North Fork down to the junction with the McKinley Fork, being especially numerous in sluggish parts of the stream. July 8 a few were seen above the junction with the East Fork. A female and four young not able to fly were seen August 15 in a slough below Kaltshak. Several adults were seen on the Kuskokwim-Yukon portage, August 31.

Charitonetta albeola. Bufflehead. The most abundant breeding duck of the lakes near the head of the North Fork of the Kuskokwim. The first pair for 1912 arrived April 28. Soon thereafter almost every small lake of the region had been preëmpted by a pair of these ducks, and on the larger lakes several pairs could be found. They were noted rarely on the river. On July 1 one was seen on the North Fork near the junction with the McKinley Fork, but none was found west of this point.

Usually the Buffleheads seemed to dwell in harmony with the other ducks, but on one occasion a male was seen to attack a seemingly peaceful male Pintail. They were often observed diving in the lakes for their food. The weight of a male averages about 16 ounces.

A male watched May 3 in a small lake spent a great deal of time cleaning himself, using his bill for the purpose. In reaching the feathers of the belly he had to lie almost on his back in the water. For cleaning the head and neck a foot was used while the bird floated on his side. During the whole process of cleaning the female floated unconcernedly alongside.

The Buffleheads are very trustful ducks and can usually be approached closely before they fly. When alarmed both sexes have the habit of repeatedly jerking the head forward, a motion that is quite independent of any action in swimming. When suddenly alarmed they usually dive rather than fly. As a rule they are silent; only on a few occasions were any calls heard. Once while driving a pair in front of a blind to take pictures, the male and female became separated. Then the male gave a squeaky call, which the female answered with a hoarse *quack, quack*, and the male immediately flew to her side. At another time a female alighted in an eddy of the river and gave a low call, *quk, quk, quk, quk, quk, quk, quk*, slowly, and the male in a few minutes appeared and alighted beside her.

Harelda hyemalis. Old-squaw. A few pairs were observed in lakes and sloughs near the head of the North Fork of the Kuskokwim during the spring of 1912. A male was seen first on May 27. The notes of a male heard while he was swimming in a slough were: a soft *kwaw*, a gurgling *kwaw-how*, and a loud explosive *kwaw kwaw how-wik*, with a sharp accent on the last syllable. The last call is sometimes varied by leaving off the first two syllables, making it merely *how-wik*. Several times in the

evenings of May and June a male was seen flying about over the river giving his wild cries.

Histrionicus histrionicus. Harlequin Duck. A male and two females were seen swimming in the North Fork of the Kuskokwim near its head on May 25, 1912. Later they crawled out on a gravel-bar and settled themselves for a rest.

Oidemia perspicillata. Surf Scoter. One pair was seen June 9, 1912, on a lake near the head of the North Fork of the Kuskokwim.

Anser albifrons gambeli. White-fronted Goose. Common on river-bars and at the margins of lakes along the Kuskokwim near the head of the North Fork. In 1912 they arrived in small flocks on April 29. A number were noted on Lake Minchumina May 9. Young were first seen June 27. Noted June 30 near the junction with the McKinley Fork. On August 7 a flock was seen near the mouth of Swift River. In August large flocks were found on the river-bars below Georgetown, and these flocks became larger and more numerous as Bethel was approached. On September 4 several large flocks were seen along Talbiksok Creek near Russian Mission-on-the-Yukon. Many flocks were seen along the lower Yukon near Kotlik on September 16. These are very noisy birds, constantly cackling and fighting among themselves.

Branta canadensis hutchinsi. Hutchins Goose. Numerous on river-bars and about lakes at the head of the North Fork of the Kuskokwim in the spring of 1912, but they were much less numerous than the White-fronted Geese. They first appeared April 30.

Olor columbianus. Whistling Swan. A flock of thirty swans was seen September 14, 1912, on a bare bar of the Yukon below Russian Mission.

Grus canadensis. Little Brown Crane. Cranes arrived in flocks at the head of the North Fork of the Kuskokwim on May 3, 1912, but were not seen after May 10. On August 18 they were numerous in large flocks along the Kuskokwim near Bethel.

Lobipes lobatus. Northern Phalarope. A specimen was secured May 23, 1912, from among sedges in the shallow water at the edge of a lake near the head of the North Fork of the Kuskokwim. Others were seen on the shores of a small lake June 6 and 9, and they were observed mating while they were swimming. One was seen on a small lake at the junction of the McKinley Fork on July 6.

Gallinago delicata. Wilson Snipe. Several were seen in a swamp near Fairbanks, August 18, 1911. One was noted in sedges on the shore of the Takotna River near Takotna Forks on July 18, 1912.

Pisobia minutilla. Least Sandpiper. A number were seen and one specimen taken on the gravelly shore of Lake Minchumina, June 23, 1912. Flocks of six to eight were common on the mud-bars along the Takotna River, July 20.

Totanus melanoleucus. Greater Yellow-legs. Several were seen singly on gravel-bars along the upper Takotna River in late July, 1912. A specimen was taken July 21.

Totanus flavipes. Yellow-legs. A pair were observed June 23, 1912, on the gravelly shore and in grass at the edge of Lake Minchumina. From their actions their nest must have been near, but it could not be found. One specimen was taken.

Helodromas solitarius cinnamomeus. Western Solitary Sandpiper. Common in May and June, 1912, at the borders of lakes and on river-bars from the head of the North Fork of the Kuskokwim down to the junction with the McKinley Fork. The first positive identification was on May 19. One specimen was taken. On June 17 a pair which evidently had a nest beside a small lake near the head of the North Fork became excited at my presence and flew about screaming and perched on nearby willows and even in the tops of the spruces.

Actitis macularia. Spotted Sandpiper. Numerous along the river shores at the head of the North Fork of the Kuskokwim. In 1912 sandpipers arrived on May 12 in flocks of four to ten birds, but positive identification of this species was not made until May 17. One specimen was taken. Many were seen below the junction with the McKinley Fork on July 6. On August 11 a nearly grown juvenile was collected from among driftwood on the shore of the Kuskokwim a short distance above Russian Mission.

Aegialitis semipalmata. Semipalmated Plover. A pair with a brood of young were seen July 7, 1912, on a sand-bar of the North Fork of the Kuskokwim a short distance below the McKinley Fork. On July 20 several were seen on gravel-bars of the Takotna River near Takotna.

Canachites canadensis osgoodi. Alaska Spruce Grouse. Local names: Chicken

or Spruce Hen. Common resident. Specimens were preserved from Fairbanks, Tanana, and from the head of the North Fork of the Kuskokwim; and they were noted also at Takotna, Akiak, and on the Kuskokwim-Yukon portage. They occur in white spruce–paper birch forest, in black spruce forest, in blueberry patches in the valleys, and in burned forests of white or black spruce. Many are killed for food by the natives and whites.

In the fall they are found in flocks and they become fat on the blueberries, cranberries, and other fruits of the region. Their winter food is the leaves and buds of the spruces. When in a tree and excited by some object the note *kwack, kwack,* may be given, and this is repeated more rapidly when about to take flight. However, they are usually entirely silent.

A hen taken May 7, 1912, near the head of the North Fork of the Kuskokwim contained an egg ready to be laid. On June 23 a female and a flock of eight or ten yellowish chicks just able to fly were seen at the Kuskokwim end of the Kuskokwim-Minchumina portage. This hen showed great distress at our proximity and scolded until all the chicks had hidden themselves. July 29 a flock of nearly grown young with an adult female were seen near Takotna.

Bonasa umbellus yukonensis. Yukon Ruffed Grouse. Local names: Willow Grouse, and rarely White-meated Grouse. Common in lowland willow thickets and in white spruce–birch forest; one was seen dusting itself on a dry river-bar. Noted at Tanana, Birches, Cosna River, Lake Minchumina, head of the North Fork of the Kuskokwim, mouth of the Takotna River, Takotna, and below Akiak. In winter their most important food is willow buds. At that time of year they often burrow into the snow for protection. March 10, 1912, two were flushed from snow tunnels among black spruces about fifty yards from the white spruce–paper birch forest along the North Fork of the Kuskokwim near its head. This was at 10 A. M. and their crops were filled with willow buds which must have been eaten that morning. The first drumming in 1912 at this locality was heard April 21.

A hen and a flock of young were seen near the head of the North Fork on June 8; and a deserted nest was found under a birch tree near the river bank on June 11. Another flock of very small young was seen June 14. A group of young about the size of quail was noted at the junction of the McKinley Fork, July 2. Well-grown young were seen July 29 near Takotna. A flock of half-grown young was seen below Akiak on August 11.

For the use of the name *Bonasa u. yukonensis* see Grinnell, Condor, 18, 1916, p. 166.

Lagopus lagopus lagopus. Willow Ptarmigan. Local names: Valley Ptarmigan and Tomican. At Tanana they spend the summer on the high bare hills north of the Yukon, but in the fall and winter after the snow has covered the ground they come lower and are found in open places, such as areas of nigger-heads, in the Yukon and Tanana Valleys in flocks of from three to two hundred birds. They may often be found in willows, especially where these are open and do not grow too tall, as in the dwarf willows above timber-line, and in winter they also visit the willows in the valleys. Patches of blueberries and dwarf birches, especially on the hills above timber-line, are a favorite habitat. Sometimes they may be found in open black spruce forest or among burned black spruces. Several flocks were seen on the Cosna River, February 17 and 18, and others near the head of the North Fork of the Kuskokwim on March 7.

A hen with a flock of young was seen in black spruce forest near Lake Minchumina, June 23, 1912. Young and old in large flocks were common in late August in the willows and on the partly bare bars of the Kuskokwim below Kaltshak, and on the tundra of the Kuskokwim-Yukon portage north of Kaltshak. Thousands in large flocks were seen in early September on the tundra along the Yukon below Andreafski.

On September 16 several in a partially exhausted condition alighted on board our steamboat off the mouth of the Yukon near Kotlik, when we were about a half-mile from shore. After leaving Nome, September 26, with an offshore wind a flock of six or seven flew on board the ocean steamer when the nearest land was at least fifty miles away. These birds were completely exhausted and could be easily picked up in the hand. At that time of year many ptarmigan must perish in Bering Sea.

The food in the fall, as found by stomach examinations, is almost entirely berries. In winter they feed principally on the buds of willow and dwarf birch.

During the winter the night and perhaps part of the day may be passed under the snow. The bird burrows down into the snow to a distance of about a foot and then makes a horizontal tunnel of from one to two feet in length, at the end of which he rests. In leaving the tunnel the bird rises directly through the snow and apparently very rarely or never follows the tunnel back to the entrance. The snow is so light that there is no difficulty in making the tunnel unless a crust has formed. Snow tunnels are not always used at night, for sometimes, especially if there is a crust, the birds roost directly on top of the snow in some protected hollow. In roosting the flock is scattered over a considerable space of ground; sometimes each bird is alone, or two or three may roost close together.

A flock in fall plumage was seen near Tanana, October 2, 1911. However, early October is a time of rapid change of color, for the birds of a flock seen October 7 were nearly white, having brown feathers only on the head, neck, and breast. October 22 a flock in full winter plumage was seen. The change in color was coincident with the coming of the snow and its increase in depth. No Willow Ptarmigan were seen in the late spring of 1912 until May 9, when one in brown and white spring plumage was seen at Lake Minchumina.

During the winter they were often heard to give the note *kuk*, repeated slowly when suspicious or rapidly when taking flight and sometimes continued while flying. However, they usually fly silently.

Lagopus rupestris rupestris. Rock Ptarmigan. Also called Mountain Ptarmigan or Tomican. Numerous near Tanana, at the head of the North Fork of the Kuskokwim, Mount Sischu, and near Takotna, on high hills. They are found among rocks, on sphagnum-covered high ridges, in blueberries and dwarf birches, in willows and alders above timber-line, and in open scrub black spruce forest. A flock of five in winter plumage was noted March 5, 1912, in open scrub willows in the Kuskokwim valley near the head of the North Fork. A specimen secured from this flock had the crop filled with willow buds. Specimens were also taken near Tanana and on Mount Sischu.

The beginning of the change from winter to spring plumage takes place about April 1. On April 13, 1912, a number of birds observed on the ridges at the head of the North Fork of the Kuskokwim had the necks colored a rich brown. On June 5 several flocks seen near the summit of Mount Sischu were not yet in full summer plumage. However, among the snow and bare rocks of that situation it was very difficult to see the birds until they flew. These flocks were seemingly composed entirely of males and were found only on the high wind-swept ridges and on the rocky summit. The white plumage of the under parts of most of these was much discolored from their habit of dusting themselves in the clay of wash deposits on the hillsides.

Pediœcetes phasianellus phasianellus. Sharp-tailed Grouse. Local name: Pin-tail Grouse. Numerous in small to large flocks in the Tanana and Yukon valleys near Tanana in the fall and winter of 1911-1912; noted at the head of the North Fork of the Kuskokwim on March 25 and April 14, 1912. Specimens were secured at both of these localities, and by H. J. Christoffers at Fairbanks. They were found among tamaracks, in black spruce forest, and in patches of blueberries and dwarf birches. As shown by stomach examinations they feed extensively during the winter on the buds of dwarf birches. Hunters claim that this species has only within the last few years appeared in these regions, never having previously been found so far west.

Astur atricapillus atricapillus. Goshawk. The skin of a goshawk was seen in an Indian cabin at Coskaket in March, 1912. The bird was said to have been killed near that place in the summer of 1911.

Buteo swainsoni. Swainson Hawk. One very melanistic specimen was taken June 4, 1912, in burned timber on the slopes of Mount Sischu.

Archibuteo lagopus sancti-johannis. Rough-legged Hawk. Numerous about the equisetum-covered mud-bars and willow-bars of the Kuskokwim River near Bethel in August, 1912. One specimen taken August 19, contained the bodies of four young shrews. Although ducks and ptarmigan were abundant on these bars they showed no fear of the hawks.

Aquila chrysaëtos. Golden Eagle. One was seen August 2, 1911, near the Tanana River above Fairbanks, and another May 18, 1912, near the head of the North Fork of the Kuskokwim, both in white spruce timber.

Falco peregrinus anatum. Duck Hawk. A nest was found July 4, 1912, on a rocky crag near the junction of the McKinley Fork with the North Fork of the Kuskokwim. The nest was only a slight depression in the moss of a narrow ledge and contained four small nestlings covered with yellowish down.

Falco columbarius columbarius. Pigeon Hawk. Small hawks, almost certainly of this species, were seen many times along the Kuskokwim River, and were especially abundant in August, 1912, along the bluffs overlooking the river below Georgetown. We were unable to secure a specimen.

Pandion haliaëtus carolinensis. Osprey. Common June 22 to July 7, 1912, along the North Fork of the Kuskokwim from the head to the junction with the East Fork. Several nests were seen June 22 in the tops of high white spruces overlooking the river near the Minchumina portage.

Scotiaptex nebulosa nebulosa. Great Gray Owl. The dried body of a great gray owl was seen on the roof of a cabin at the junction of the McKinley Fork with the North Fork of the Kuskokwim.

Bubo virginianus lagophonus. Northwestern Horned Owl. Often heard hooting at night in the white spruce forest along the Tanana River near Fairbanks, along the Cosna River, and at the head of the North Fork of the Kuskokwim. From June 25 to July 7 family groups were common in willows at the edge of the white spruce forests along the North Fork down to some distance below the junction with the McKinley Fork. These groups usually consisted of three frowsy young, with one or both old birds somewhere nearby. A few times only two young were noted in a group. One specimen was taken near the Minchumina portage, and one at Fairbanks by H. J. Christoffers. For the use of the name *Bubo v. lagophonus* see Oberholser, Proc. U. S. Nat. Mus., 27, 1904, p. 185.

Surnia ulula caparoch. Hawk Owl. Local name: Ptarmigan Hawk. Common near Tanana in the fall and winter of 1911, being first noted on October 6. Several were noted on the Cosna River, February 18. Numerous at the head of the North Fork of the Kuskokwim in the spring of 1912. Several were seen September 1, 1912, on the Kuskokwim-Yukon portage. They occur in white spruce forest, in black spruce forest, and in burned forest. In winter they were noted hunting over areas of blueberries and dwarf birch, and over the open treeless ridges.

A nest containing five slightly incubated eggs was found May 9, 1912, in white spruce–paper birch forest near Lake Minchumina. The nest was hollowed out of the rotten wood in the top of an Alaska paper birch stub about fifteen feet high, and the bark remaining in place formed the sides of the nest. A few leaves had fallen into the nest, but no other material had been added. The male made angry dashes at us as we cut down the stub, though the female merely looked fierce. Several times when we retired a short distance she returned to the nest and resumed incubation. On June 26 a young Hawk Owl just able to fly was seen in company with a parent at the edge of the forest along the North Fork of the Kuskokwim below the Minchumina portage.

Notes and calls are numerous and quite varied, but all seem quite musical. *Kr-r-r-r-e-e-eep*, a low rapid rattle rising to a cry is often heard. *Wur-a-wur-a* (rapid) and *kuk-a-wuk* (very low) were given by a male on March 25 while he was seated in a dead spruce.

Streptoceryle alcyon caurina. Western Belted Kingfisher. One was seen over a slough near Fairbanks, August 19, 1911. They were numerous at the head of the North Fork of the Kuskokwim in 1912, appearing first on May 21. On July 7 one was seen to fly from a nest-hole in the river bank below the entrance of the McKinley Fork. They often perch on birches or white spruces overlooking the river. Several were seen on the Takotna River July 20. For the use of the name *Streptoceryle a. caurina* see Ridgway, U. S. Nat. Mus., Bull. 50, pt. 6, 1914, p. 420.

Dryobates pubescens nelsoni. Northern Downy Woodpecker. One was seen in burned black spruce timber ten miles north of Tanana, September 22, 1911.

Dryobates villosus septentrionalis. Northern Hairy Woodpecker. A specimen was obtained August 5, 1911, in white spruce timber along the Tanana River, nine miles east of Fairbanks.

Picoides arcticus. Arctic Three-toed Woodpecker. A specimen was taken by H. J. Christoffers about eight miles east of Fairbanks, September 18, 1911.

Picoides americanus fasciatus. Alaskan Three-toed Woodpecker. A common resident in white spruce forests near Tanana, Fairbanks, and at the head of the North Fork of the Kuskokwim. A few were noted in burned black spruce. Specimens were preserved from the latter locality and from the Cosna River. An old bird accompanied by one young was seen July 4, 1912, at the junction of the McKinley Fork with the North Fork. The two were on a spruce tree, and the parent was busily digging out morsels which were promptly fed to the young. A young bird was shot near Akiak, August 13. Many insects and cocoons are hidden in winter under the bark of the spruce trees, and these furnish food for this hardy bird. A clear call *chee-r-rp* was noted in November.

Colaptes auratus borealis. Boreal Flicker. Several were seen in white spruces along a slough near Fairbanks August 7, 1911. For the use of the name *Colaptes a. borealis* see Ridgway, Proc. Biol. Soc. Wash., 24, 1911, p. 31.

Nuttallornis borealis. Olive-sided Flycatcher. A number were observed during May and June, 1912, in the tops of the highest white spruce trees along the North Fork of the Kuskokwim near its head. The tops of dead trees in the burned forest were preferred. They were first noted May 16. One specimen was taken.

Otocoris alpestris arcticola. Pallid Horned Lark. A few were seen June 4-5, 1912, about rocks and on the ground of the wind-swept ridges of Mount Sischu at about 3000 feet elevation. One specimen was secured.

Pica pica hudsonia. Magpie. At McGrath the wings and tail of a Magpie were seen nailed to the wall of a cabin. This bird had been killed by Mr. Bert Eldridge, a trapper, at the head of Big River.

Perisoreus canadensis fumifrons. Alaskan Jay. Common in white spruce–paper birch forest, in black spruce forest, in burned timber, and in lowland willows along the streams. In winter they also frequent the neighborhood of cabins and camps. Specimens were taken at Tanana and at the head of the North Fork of the Kuskokwim; and by H. J. Christoffers at Fairbanks. They were common at these places and were noted also along the Cosna River, at the junction of the McKinley Fork with the North Fork of the Kuskokwim, on the hills near Takotna at timber-line, and on the Kuskokwim-Yukon portage.

These birds are a great nuisance to trappers as they steal the bait and spring the traps set for fur animals. Exposed caches of food are likely to be carried away piecemeal by them. In several instances these jays were seen to attack hawks and hawk owls.

During the latter part of the time of nesting until the young are able to fly, from about April 1 to June 1, these jays keep almost entirely away from the vicinity of camps and cabins. Parents and blackish young in family groups were first seen at the head of the North Fork of the Kuskokwim on May 1, 1912. About June 1 they began to appear quite often about the cabin, but they never became so numerous nor so bold as they were during the winter.

Corvus corax principalis. Northern Raven. Common resident. They occur regularly in the white spruce and paper birch forest along the streams and also range out over the barren hills. At Tanana numbers feed in winter on the garbage thrown out on the ice of the Yukon. February 19, 1912, several were seen along the Cosna River. April 12 and 14, ravens were observed carrying sticks, apparently for nests, in black spruce forest on the Cosna River and near the head of the North Fork of the Kuskokwim. May 8 a raven was seen flying over Lake Minchumina. One was noted July 4 at the junction of the McKinley Fork with the North Fork, and three were seen above the East Fork on July 7. Near Akiak several were seen August 18, and at Andreafski several more on September 18. One specimen was preserved from Tanana.

Euphagus carolinus. Rusty Blackbird. A few were noted August 17, 1911, at the edge of a slough near Fairbanks. They were numerous in May and June, 1912, about marshes and on the shores of lakes at the head of the North Fork of the Kuskokwim. One specimen was taken. In 1912 they were first noted May 8 at Lake Minchumina. Several were found at the junction of the McKinley Fork with the North Fork, July 2. In the swamps below Kaltshak they were common on August 15.

Pinicola enucleator alascensis. Alaska Pine Grosbeak. A few were seen in black spruce forest near Tanana, October 6, 1911, and in burned spruces, October 20, and several specimens were secured. Specimens were also taken at Fairbanks by H. J. Christoffers.

Loxia leucoptera. White-winged Crossbill. A specimen was taken August 17, 1911, from a flock of five which were in the top of a dead black spruce in burned timber near Fairbanks. In March and April, 1912, they were common in black spruce timber at the head of the North Fork of the Kuskokwim, and one specimen was secured. On July 7 and 11 several pairs were noted in white spruce timber and in willows along the North Fork above the entrance of the East Fork. They are locally called the "canary", evidently with reference to their song, which, as heard in the winter, is clear and very sweet.

Acanthis hornemanni exilipes. Hoary Redpoll. Occasionally seen in lowland willows and alders, in white spruce forest, and in burned black spruce forest near Tanana in flocks of six to one hundred birds, from December 28, 1911, to February 15, 1912. Specimens were taken.

Acanthis linaria linaria. Redpoll. Common in flocks at Tanana and at the head of the North Fork of the Kuskokwim during the fall and winter of 1911-1912. Specimens were taken at both localities. They occur in willows and alders, in white spruce and paper birch forest, in black spruce forest, in blueberries and dwarf birches, and in burned forest. None were seen above timber-line. Their principal winter food is the seeds of alders and dwarf birches. February 17, 1912, a number were observed drinking the water at an overflow on the Tanana River near Coskaket. At the head of the North Fork of the Kuskokwim three nests were found in willows and in a small paper birch in late May and early June, 1912. (See Dice, Condor, 20, 1918, pp. 129-131.) Their call is a drawn out *cheed*.

Acanthis linaria holboelli. Holböll Redpoll. One specimen was taken December 3, 1911, from a small flock in burned black spruce forest ten miles north of Tanana. Each flock of redpolls seems to be composed of only one variety, although the three varieties occur in the same locality.

Plectrophenax nivalis nivalis. Snow Bunting. Numerous in large flocks April 7, 1912, in burned white spruce–paper birch forest and in partially cleared parts of the Tanana Valley near Tanana.

Passerculus sandwichensis alaudinus. Western Savannah Sparrow. A few noted in white spruce–paper birch forest along the North Fork of the Kuskokwim near its head in May and June, 1912. They first appeared on May 15. One specimen was secured. Another was taken at the junction with the McKinley Fork in black spruces on July 2. On July 27 several were seen and one secured in dwarf birch and sphagnum just above timber-line on the hills near Takotna. A well-grown young was taken August 16 at the edge of willows on a river-bar a short distance below Kaltshak. Mr. H. J. Christoffers took one specimen at Fairbanks.

Zonotrichia leucophrys gambeli. Gambel Sparrow. A flock of young accompanied by parents was noted in willows beside the Yukon at Sheep Creek near Eagle, July 20, 1911. One was secured in scrub alders and willows in a clearing on a low hillside near Fairbanks, August 17. Common at Tanana in the summer of 1911, where they were last seen September 2. Common in May and June, 1912, in white spruce–paper birch forest and in willows along the Kuskokwim near the head of the North Fork, where the first male arrived May 17. A nest containing five well-incubated eggs was found June 6 in burned black spruce timber. The nest was composed of dried grasses and leaves and was placed in a slight depression of the ground under a dwarf birch. On July 18 several were seen in a small garden at Boerner. A specimen was taken July 27 in scrub alders near timber-line on the hills near Takotna. Other specimens were preserved from Tanana and from the head of the North Fork of the Kuskokwim.

Spizella monticola ochracea. Western Tree Sparrow. Common in small flocks near Tanana in the fall of 1911, until September 28. They were first seen at the head of the North Fork of the Kuskokwim on May 7, 1912, when a flock of twenty was observed. One was seen on a willow-bar below Kaltshak on August 16. They occur in lowland willows and alders, in white spruce–paper birch forest, and in burned white

spruce timber. Specimens were taken at Tanana, at the head of the North Fork, and by H. J. Christoffers at Fairbanks.

Junco hyemalis hyemalis. Slate-colored Junco. Common in flocks near Tanana in the fall of 1911, until September 28. Common also in 1912 along the Kuskokwim near the head of the North Fork, where the first pair appeared May 3. A young bird just able to fly was seen in the company of a parent on June 12. Several adults were noted near timber-line on Mount Sischu, June 5. July 4 a nest with four eggs was found under the edge of a rock in burned black spruces on a hillside near the junction with the McKinley Fork. Other records are from near the junction with the East Fork, from Takotna, and August 13 from the Kuskokwim near the mouth of the river. Specimens were taken at Tanana and at the head of the North Fork. Their habitats are the willows and alders near the river, white spruce birch forest, burned forest, and the alders near timber-line. The song heard in May is a simple *chee-chee-chee-chee-chee-chee-chee.*

Melospiza lincolni lincolni. Lincoln Sparrow. Several adults and a number of young were seen in heavy grass in burned white spruce timber near the edge of the Tanana River above Fairbanks, August 4-5, 1911, and one specimen was secured. Several were seen in a swampy area on August 17.

Passerella iliaca iliaca. Fox Sparrow. Common during May and June, 1912, along the Kuskokwim near the head of the North Fork, where they were first noted May 5. One specimen was taken. Their habitat is chiefly in the white spruces, paper birches, and willows along the streams, though one was noted in song in black spruces several hundred yards from other types of forest. The song of the male during May is a trilled *Ee-chee weer-r-r-a-chr-r-r-ree.* The call note is a sharp *tchip.* Several were noted in a garden at Boerner, July 18.

Petrochelidon lunifrons lunifrons. Cliff Swallow. A few were seen near Tanana in the summer of 1911. At Rampart on July 21, 1911, and at Takotna on July 22, 1912, a number were noted nesting on houses in the towns.

Hirundo erythrogaster. Barn Swallow. One was seen flying over the river in front of Takotna, July 24, 1912.

Riparia riparia. Bank Swallow. Abundant in the summer of 1912 all along the Kuskokwim from the head of the North Fork to Georgetown. They were first seen at the head of the North Fork on May 22. Great nest colonies were noted in the soft dirt banks of the rivers, and these were seen to be in use at least from June 20. No swallows were seen below Georgetown after August 9.

Bombycilla garrula. Bohemian Waxwing. A small flock was seen May 9, 1912, in black spruces near Lake Minchumina. Several small flocks were found in burned white spruce forest near the head of the North Fork of the Kuskokwim on May 16 and again several days later. One specimen was taken.

Lanius borealis invictus. Northern Shrike. One specimen was taken near Fairbanks, September 8, 1911, by H. J. Christoffers.

Vermivora celata celata. Orange-crowned Warbler. A specimen was taken August 31, 1911, in scrub alders in an open, burned area of the Yukon Valley near Tanana. Several were seen in willows near the head of the North Fork of the Kuskokwim during May, 1912, where they first appeared May 20. One specimen was collected. August 17 several were seen along the Kuskokwim a short distance above Akiak.

Dendroica coronata hooveri. Alaska Myrtle Warbler. Small flocks were seen near Tanana during late August and until September 5, 1911. In May and June, 1912, a few were found at the head of the North Fork of the Kuskokwim, where they first appeared May 12. They are found in willows and alders along the streams and in white spruce and paper birch timber. The song heard in May was a rapid lisp, ending in a trill: *tchee-chee-chee-chee-chee-ee-ee-e-e-t.* Specimens were preserved from Tanana, and by H. J. Christoffers from Fairbanks.

Seiurus noveboracensis notabilis. Grinnell Water-Thrush. In 1912 they first appeared at the head of the North Fork of the Kuskokwim on May 16, and soon became common along the margins of streams and on lake shores. They occur also in willows and in white spruce–paper birch forest. One specimen was taken. June 24 they were noted on the muddy shores of Lake Minchumina. Along the North Fork they were commonly noted to July 6 down to below the junction with the McKinley Fork. Several

were seen August 17 a short distance above Akiak. The song in May is a simple *chibby-chibby-chibby-chib-chib-chib-chib.*

Wilsonia pusilla pusilla. Wilson Warbler. A few were seen during May, 1912, in willows and in white spruce and paper birch forest along the North Fork of the Kuskokwim near its head. The first arrivals were noted May 19, when two males were found in song, one of which was collected. On June 4 a male was seen in white spruce timber in a ravine near timber-line on Mount Sischu. Another was seen in alders in a small ravine in the hills at timber-line near Takotna, July 28.

Anthus rubescens. Pipit. Small flocks were seen on cultivated fields near Tanana on August 29 and 31, 1911. A specimen was collected from a small flock in a grassy field, September 8. Several were seen on a barren ridge near the summit of Mount Sischu, June 5, 1912. H. J. Christoffers took a specimen at Fairbanks.

Penthestes atricapillus turneri. Yukon Chickadee. A small flock was seen August 17, 1912, in willows on the banks of the Kuskokwim a short distance above Akiak.

Penthestes hudsonicus hudsonicus. Hudsonian Chickadee. Occasional resident near Tanana, along the Cosna River, and at the head of the North Fork of the Kuskokwim. Specimens were taken at Tanana and at the head of the North Fork. They occur in willows and alders and in white spruce and paper birch forest. They were noted near the junction with the South Fork, and in alders near timber-line at Takotna.

Acanthopneuste borealis kennicotti. Kennicott Willow Warbler. A number in loose flocks were seen July 28 and 29, 1912, in patches of scrub alders just below timber-line on the hills near Takotna. One specimen was preserved.

Regulus calendula calendula. Ruby-crowned Kinglet. Occasionally seen near Tanana in late August and until September 2, 1911. One specimen was taken. A few were found in May and June, 1912, near the head of the North Fork of the Kuskokwim, where they first appeared May 5. Several were noted near Lake Minchumina, May 9. July 23 one was seen in alders near timber-line on the hills near Takotna. In the valleys they occur in willows and alders and in white spruce and paper-birch forest.

Hylocichla aliciae aliciae. Gray-cheeked Thrush. Numerous in black spruces and in burned black spruce timber near the head of the North Fork of the Kuskokwim in the spring of 1912. Several were also seen on the muddy shore of a small sink lake. A specimen was taken June 9.

Hylocichla ustulata swainsoni. Olive-backed Thrush. Common in white spruce and paper birch forest along the North Fork of the Kuskokwim near its head in the spring of 1912. A specimen was secured July 4 at the junction with the McKinley Fork.

Planesticus migratorius migratorius. Eastern Robin. Numerous, often in large flocks, near Fairbanks and Tanana in July and August, 1911; remaining at Tanana until September 16. In the fall they feed extensively on blueberries and cranberries. The first spring arrival in 1912 was seen May 9 at Lake Minchumina. A few were found in May and June near the head of the North Fork of the Kuskokwim. A specimen was taken July 3 at the junction with the McKinley Fork. Young and old were noted in alders near timber-line at Takotna, July 29. A few were seen on the Kuskokwim-Yukon portage September 4. They occur in alders, in black spruces, in burned forest, in patches of blueberries, and in white spruce and paper-birch forest.

Ixoreus naevius meruloides. Northern Varied Thrush. Several small flocks were seen near Tanana, September 10, 1911, in black spruce timber, where they were feeding on blueberries. One specimen was preserved. Numerous in May and June, 1912, in white spruces along the North Fork of the Kuskokwim, where they first appeared May 2. Often they were noted apparently feeding on the gravel-bars and mud-bars of the river. Young in company with parents were seen June 20. Several were found July 3 at the junction with the McKinley Fork. Noted in alders near timber-line at Takotna, July 23 and 28. A specimen was secured at Fairbanks by H. J. Christoffers.

Saxicola oenanthe oenanthe. Wheatear. A few were seen August 18, 1911, about a log jam in a slough, and on a telephone pole near Fairbanks. Several were observed to capture flying insects in the air.

Museum of Zoology, Ann Arbor, Michigan, March 31, 1920.

FROM FIELD AND STUDY

Sunlight and Shadow.—Since we put away the gun and took to the field-glass I wonder if many a doubtful bird on our local lists, admitted solely upon field-glass observation, could not be traced to the effect of sunlight or shadows. While doing a little collecting recently in the winter woods of southeastern Arkansas this was brought home to me as never before.

The man with the field-glass finds the sunshine one of his greatest drawbacks to identification. It is a good thing to have light on a subject but a very unsatisfactory condition to have a glare of brilliant sunlight on a bird we are endeavoring to identify. And should it be necessary for us to look directly toward the sun, we may find the identification of the species well nigh impossible. What a gorgeous plumage a little sunshine can impart to some dull feathered and commonplace bird! The bird-man afield often finds it necessary to work under conditions that are far from ideal. It is not always possible to keep one's back to the sun and it is generally at the least expected and unprepared-for moment that the prize of the day appears. A living bird is an active creature and rarely is it so accommodating as to sit still long enough for us to make out every detail of its plumage. Possibly ninety-five times out of a hundred our bird moves on before we have clearly seen that one *sure* identification mark. If we are fortunate we may be able to follow it and observe it under more favorable conditions, but the chances are that we have seen the last of it for that day and we have just seen enough to set us guessing. It may be that we caught but a fleeting glimpse of it, or we may have had it under observation for a few seconds, but because of some projecting twig we have failed to see that much desired field mark. No doubt we can name its family and perhaps we are almost certain about its species. We saw enough to be all but *positive* and it takes but a freak of light or shadow to supply that one half hidden spot.

One trouble is that we are too apt to look for the rare and unusual in the bird we meet. We should curb our enthusiasm and imagination and treat every bird we see as the common and to-be-expected species for our locality until we have *proven* it to be otherwise, and when the identity lies in some minor detail, the proof should always be the bird in the hand.

In the cause of accurate observation it might be a good thing if every field-glass student could use a gun at least a few times in his or her life. A gun makes one sceptical and thereby careful. When you identify a bird as this or that with the glasses and then shoot it and find it to be something different, it brings home to you as nothing else can, how very easy it is to be mistaken. I believe that most collectors have had such an experience.

The field-glass observer is often hurt because someone doubts his accuracy in identifying some unusual bird, but no one realizes better than the man who has collected, what an easy thing it is to misidentify a bird, and when the identification rests on some minor point, it is little wonder that he questions it. I believe my own field-glass lists would be larger had I never collected. Many is the bird I leave off my list whose identity I am all but *positive* about.

Down in Arkansas one day I saw a Hooded Warbler; I identified it with the field-glass, but my gun transformed it into a Black-throated Green Warbler, and no one could have been more surprised than I. The sunlight or the shadows had played me a trick.—Chreswell J. Hunt, *Chicago, June 2, 1920.*

How Fast Can a Roadrunner Run?—The Roadrunner has gained the reputation of being swift of foot, but is its reputation based on actual swiftness, or merely on the fact that the bird gets from place to place by the conspicuous use of its legs? In his article on "Habits and Food of the Roadrunner in California" (Univ. Calif. Publ. Zool., vol. 17, 1916, p. 27) H. C. Bryant quotes from Heermann that the Roadrunner "may . . . be overtaken when followed on horseback over the vast open plains" and that Heermann "once saw one captured by a couple of dogs." If these statements are accepted, as they will be by most people, not for what they literally say, but for what they imply in regard to the speed of the Roadrunner, they are calculated, I fear, to give one a slightly

exaggerated impression. In describing how fast mice can scoot I could, with a dishonest sort of truthfulness, state that I have seen them run down by automobiles going at sixty miles an hour.

On July 21, 1919, H. G. White and I were travelling by Ford down the Arroyo Seco Canyon, Monterey County, California. Rounding a curve at very low speed we surprised a Valley Quail in the road. Like the Irishman on the track in front of the onrushing locomotive, who said his life would be saved if he reached the switch first, our quail seemed to figure that its only salvation lay in outsprinting the Ford down the road. We gradually increased our speed till the bird was pressed to its utmost and could no longer gain on us. At this stage of the race our speedometer registered 12 miles an hour.

Next day, when en route from Soledad to the Gabilan Range via Stonewall Creek, we had exactly the same experience with a Roadrunner. At the top speed to which we provoked our victim, the famous runner was moving at the tremendous rate of 10 miles an hour on a practically level piece of road.

These two records would be more conclusive if backed up by others of the same kind. Both birds, however, seemed to be able-bodied adults with nothing the matter with their legs, and their speed, it seems fair to believe, must have been not far from average. It would nevertheless be of interest if other ornithological motorists could make similar tests. Considering the propensity of both the Roadrunner and the Valley Quail for getting in the road ahead of machines and trying to beat them to the next turning-off place, it ought to be possible for observers to gather some data on the subject. Is the Quail really swifter than the Roadrunner? Have we any bird swifter—or less slow—than either? For example, how about the Ring-necked Pheasant (*Phasianus torquatus*), or even the barnyard rooster, when urged?

It might be in good order here to urge again the opportunity offered motorists for testing the speed of birds in flight, as already discussed by Alexander Wetmore (Condor, XVII, May, 1916, pp. 112-113). It is of common occurrence for birds, scared up at the roadside, to fly long distances just ahead or abreast of the machine. Some seem to imagine they are thereby escaping from danger. Others *act as if* they considered the thing a sort of game. That suggests another idea: do birds have a game-playing instinct or capacity?—RICHARD HUNT, *Museum of Vertebrate Zoology, Berkeley, California, June 11, 1920.*

Notes on Some Birds of Santa Cruz Island, California.—Through the courtesy of Mr. F. Caire of San Francisco, the writer was enabled to spend from January 22 to January 26, 1920, on Santa Cruz Island. The following additions to Mr. A. B. Howell's excellent paper on the Birds of the Channel Islands may be of interest.

Zonotrichia leucophrys nuttalli. Specimens of this subspecies, put by Mr. Howell in the hypothetical list, were taken and identified by Mr. L. E. Wyman. The subspecies seemed about equally numerous with *Z. l. gambeli.*

Hylocichla guttata guttata. A small dark Hermit Thrush was taken and sent to Mr. Swarth. The skin reached him in poor condition, but he writes that he believes it to be the Dwarf Hermit Thrush. This subspecies was also placed by Mr. Howell on the hypothetical list.

Telmatodytes palustris plesius. A single Marsh Wren taken at Prisoner's Harbor in the only patch of cat-tails seen on the island, was identified by Mr. Wyman as of this subspecies. It has not before been recorded from Santa Cruz Island.

Geothlypis trichas scirpicola. A female of this subspecies of Yellowthroat was taken in the same patch of cat-tails at Prisoner's Harbor. It has not before been recorded from the island.

Sialia currucoides. Mountain Bluebirds, not before recorded from any of the Channel Islands, were observed in three different localities. A scattered flock of over twenty were hovering and feeding on the mesa near Black Point at the west end of the island. Another small flock was seen near the ranch house at the west end, and two birds were seen in the pines in the central part of the main valley.

Nucifraga columbiana. Clark Nutcrackers were reported in the winter of 1919-1920 from many points near the coast, but it is nevertheless surprising that they crossed the twenty-six miles of channel and reached Santa Cruz Island. The birds, called Jack-

daws by the local fishermen and ranchers, attracted their attention as early as October, 1919. These men had never seen them on the island before. Scattered birds were seen by the writer throughout the pine belts in January and again in the first week of April, on a second trip to the island. It is tempting to speculate what might happen if the nomadic impulse had died out after six months and the species should become a permanent resident of the pine forests on the island, in which Crossbills and Red-breasted Nuthatches are already resident.—RALPH HOFFMANN, *Stockbridge, Massachusetts, June 4, 1920.*

A Peculiar Flicker Habit.—For a time a Red-shafted Flicker (*Colaptes cafer collaris*) enjoyed himself by drumming on a sheet metal air vent on the roof of our house. As a rule he did his drumming early in the morning. One time I caught him in the act of drumming and it was interesting to watch him. The noise sounded very much like a small riveting machine at work.—LUTHER LITTLE, *South Pasadena, California, July 15, 1920.*

Authors' Names in the Second Condor Index.—In the Second Ten Year Index to The Condor for 1909-1918, by J. R. Pemberton, full names of authors were included as far as possible. In about 40 cases it proved impracticable to secure the names in full, but about half of them are now known. In presenting these names the opportunity may be taken to correct a few errors which inadvertently occurred in printing the Index. Such corrected names are marked by an asterisk, and names not generally used are enclosed in brackets.

Following are some of the incomplete names in full:

Alexander, Annie Montague
Bailey, Vernon [Orlando]
Bergtold, William Harry*
Brooks, Allan [Cyril]
Bryant, Amy Morrish
Bunker, Charles Dean
Buturlin, Sergius Alexandrovich
Cameron, Ewen Somerled
Dixon, Joseph [Scattergood]
Dubois, Alexander Dawes
Figgins, Jesse Dade
Hunt, Richard Montague
Kirn, Albert* Joseph Bernard
McAtee, Waldo* Lee
McLean, Donald Dudley
Mailliard, Ernest Chase
Palmer, Robert Hastings
Vogelsang, Charles Adolph
Wetmore, [Frank] Alexander

On pages 7 and 8 of the Index are given full names of authors whose papers appeared in the first ten volumes of THE CONDOR. To this list should now be added Gerald Bamber Thomas and Clark Crocker Van Fleet. Three names in the list require correction, viz., Stephen Alfred Forbes, Frederick Hall Fowler, and William Le Grange Ralph. Examination will show that the first two were inadvertently combined and the last contained a typographical error. These additions leave 31 names in the first Index and about 20 in the second, still incomplete.—T. S. PALMER, *Washington, D. C., July 19, 1920.*

Bryant Marsh Sparrow in the Hills.—In The Condor for March, 1920 (page 63), there is an article by Joseph Mailliard and J. W. Mailliard relative to the breeding of the Bryant Marsh Sparrow (*Passerculus sandwichensis bryanti*) in other than low ground. My records show that a set of four eggs, with nest and parent bird, was taken by H. H. Bailey in San Mateo County, California, on May 1, 1904. The nest was placed on the ground in a slight depression, well hidden by a clump of grass four inches high. The location was almost at the top of a hill, between the bay and ocean, and, as I remember it, three miles or more from the salt marsh. The elevation, I judge, was around 350-400 feet.—HAROLD H. BAILEY, *Newport News, Virginia, July 12, 1920.*

Blue-fronted Jay Nesting in Los Angeles, California.—A number of Blue-fronted Jays (*Cyanocitta stelleri frontalis*) spent the winter of 1919-20 in different parts of Los Angeles and were reported in THE CONDOR from several localities. A group of them lingered late into the spring in Griffith Park where they were noted by the President of

the Bird-lovers' Club of the Southwest Museum about May 5 carrying nesting material. Later they were seen by members of the Audubon Society. On July 9, 1920, the president and two other bird students from the Bird-lovers' Club saw four of these birds in Griffith Park near the Western Avenue entrance. Though fully feathered two of them were evidently young birds, for they had the light colored edges to the corners of the mouth that indicate youth, the soft downy look of new plumage, a different tone from that of the older birds, and they were actually being fed by a mature Blue-fronted Jay. The food given them was a highly sophisticated type for these creatures of the wild, for it consisted of pieces of what upon examination appeared to be an ice-cream cone which had been soaked soft and left on the bank beside a much-frequented trail. The birds however, were evidently used to civilization, for the one feeding paid no attention to the three observers less than twenty feet away, but made several visits to the flat, pancake-like object, tearing off strips and stuffing its mouth as full as possible before flying into a large sycamore tree where it was seen to feed the two young birds. This air of wontedness to civilization in the old bird, and the evident fact that the young birds had not been long out of the nest seem sufficient proof to me that the nest must have been in the immediate neighborhood. It would be interesting to know if this is the first record of the Blue-fronted Jay nesting in the Upper Sonoran Zone in Southern California.—Mary Mann Miller, *Los Angeles, California, July 10, 1920.*

Fig. 38. Gourd used as nest site by a pair of Anthony Brown Towhees.

Domesticating California Birds.—That many of our California birds will become more domestic with the years is evidenced by the experience of the writer. I have put up boxes, cans and gourds about my suburban home and made several drinking fountains in suitable places. For three years a San Diego Wren has occupied gourds near the door. A Black Phoebe has built over the window. An Ash-throated Flycatcher raised a brood in the elbow of an abandoned stove-pipe on an out-house. The Green-backed Goldfinch, House Finch (in boxes also), and California Shrike nest close to the house in orchard trees. A Mockingbird invariably builds in a thick tree in the back yard. The Anna Hummingbird and Arizona Hooded Oriole nest every year in one of my sugar gums. Cliff Swallows build on my neighbor's barn—and feed on my bees.

The Anthony Brown Towhee has often built in an elder bush or orchard tree; but not until last year did one ever use an artificial nest. A bird chose to raise a brood in a gourd hanging on the corner of a chicken yard in the full sun without a bit of shelter near it. Last April another Anthony Towhee (perhaps the same bird) nested in another gourd which was placed in the lower forks of an acacia tree about four feet from the ground. Although disturbed daily this bird raised her brood of four. I have seen scores of nests of Anthony Towhee in low bushes and found one years ago on the edge of a low bank in the grass, but never saw one in an artificial nest until last year—which shows that the birds *can* learn to get along with people.—Carroll DeWilton Scott, *San Diego, California, July 15, 1920.*

Clark Nutcracker and White-winged Dove in Southern California.—On a recent trip to the Laguna Mountains, San Diego County, I was rather surprised to find the Clark Nutcracker (*Nucifraga columbiana*) in flocks ranging from a few birds to fifteen or twenty in the flock. They were on the ground, tearing up the pine needles in search of food. Observed May 31 and June 1.

It may be of interest to note that at least one pair of White-winged Doves (*Melopelia asiatica trudeaui*) is nesting in the vicinity (Brawley). They arrived May 4 and have been about until the present date, June 12.—John C. Fortiner, *Brawley, California, June 12, 1920.*

Interesting Records from the San Joaquin Valley Region.—

Costa Hummingbird. *Calypte costae.* On several occasions in the early spring months while collecting in the arid hills bordering the San Joaquin Valley at a point about due west from Dos Palos, I have found hummingbirds' nests of the previous season's use, built on branches of sage bushes overhanging dry gullies. Those examined have all been unmistakable nests of the Costa Hummingbird and quite typical in both situation and construction. In fact, they differ in no way from nests of this species which I collected in Ventura County in 1916. From this evidence it would seem safe to extend the known breeding range of this species northward along the east slope of these hills nearly to the 37th Parallel.

Hammond Flycatcher. *Empidonax hammondi.* An unseasonable record for this species is that of a male in bright plumage taken in the bottom lands of the Merced River near Livingston, Merced County, on December 20, 1918. The bird was frequenting the inclining trunks of some large, old willows in a rather damp locality. It was active and strong on the wing and no trace of any injury could be found while the skin was being made up. That this Flycatcher had been able to secure an abundance of food was very evident as the skin was reeking with fat.

Dusky Warbler. *Vermivora celata sordida.* On January 8, 1919, I noticed three Warblers which looked like rather dark examples of *lutescens.* They were frequenting some weeds along a drainage canal near Atwater, Merced County. On the 11th of the same month I made a hurried trip to the Merced River near Irwin City, and again encountered three of these birds after special search. The presence of *lutescens* itself would have been interesting at this date but I was convinced that the birds previously seen were *sordida,* and the single specimen taken has been so identified by Mr. H. S. Swarth. This species evidently wintered in some numbers in the San Joaquin Valley during the winter of 1918-19.—John G. Tyler, *Turlock, California, June 30, 1920.*

Nesting of the Blue-fronted Jay in South Pasadena.—During the Christmas holidays my attention was called to a number of Blue-fronted Jays (*Cyanocitta stelleri frontalis*) flying about in a row of large eucalytus trees which form a boundary between our place and the one next to us. The jays were very noisy and were continually chasing the California Woodpeckers about the trees. The jays were seen and heard, from time to time subsequently, which surprised me very much, for at one time I thought they had left for their mountain home.

On Sunday morning, June 6, 1920, I heard a pair of birds scolding and went to see what the disturbance was. My presence on the scene interested the birds and they followed me about while I looked for a nest. I could not find a nest, but while walking about spied a young bird on the ground. This bird was dead and had probably been killed from a fall as it was just about time for it to leave the nest. The bird was saved and is now in my collection. Up to the present time (July 15) the jays are still about. It will be interesting to see if they will be on hand next spring.—Luther Little, *South Pasadena, California, July 15, 1920.*

An Ovenbird on the Mohave Desert.—At about 10:45 on the morning of May 18, 1920, I was seated, in company with Dr. Francis B. Sumner, on a pile of bags, boxes, bed-rolls and other items of camp equipment which were stacked ready for transportation from our station at 5 miles south of Lavic, San Bernardino County, California, to Ludlow, about fifteen miles nearer civilization. Our eyes were fixed hopefully on a

black speck, which, accompanied by an inverted image of itself, we had reason to believe was approaching us across the glaring white surface of a dry lake, and would presently resolve itself into the truck which had promised to come for us and our outfit at 10 A. M.

At almost exactly 11 o'clock the truck reached us and came to a standstill beside a nearby windmill and tank of magnesia water, where the driver stopped his engine to cool it off. The truck, alas, was not the one we had ordered. It belonged to a mining company and was on its way into the Bullion Mountains above us.

Nevertheless, it had hardly come to a standstill, when a little bird appeared in the road beneath it, walking about gratefully in the small patch of shade afforded. Dr. Sumner spied the bird first. He seemed to think it odd or unusual, and asked me with interest what kind of a bird it might be. The fact that the bird was *walking*, and in a very teetery fashion, allowed me about two guesses, and I replied that the bird was either a Water-Thrush or an Ovenbird. The bird was tame, and I was soon able to see that the back was green and the crown old-gold. I asked Paul, the truck driver, to keep his eye on the bird while I rummaged through the packed outfit for my gun. Paul did as I asked him, and I am now able to prove to any who might otherwise have been skeptical that the bird *was* an Ovenbird (*Seiurus aurocapillus*)—a male with testes 5/16 of an inch in diameter. The study-skin now bears no. 40648, in the California Museum of Vertebrate Zoology.

This is the only proved case of an Ovenbird on the mainland of California, though two were observed on the Farallon Islands, May 29, 1911 (Dawson, Condor, XIII, 1911, p. 167), one of which was taken.

I am not properly elated, I fear, at having been placed by chance under the necessity of taking the life of a lost Ovenbird on the inhospitable desert. In fact it seemed the irony of fate that of all birds I should have met this one, whom I have heard sing its ecstatic aerial song by moonlight over the pine forests of Massachusetts in June, and whom I have celebrated in a poem published in "Poetry: a Magazine of Verse."—RICHARD HUNT, *Museum of Vertebrate Zoology, Berkeley, California, June 11, 1920.*

EDITORIAL NOTES AND NEWS

To those interested in the protection and conservation of wild life upon our waters and whose attention has been called to the destruction of sea-bird life by the discharge of refuse oil from the ballast tanks of oil carriers into the water, the news will be gratifying that the only remaining company which persisted in this, the Union Oil Company, has notified the California Academy of Sciences of the cessation of this practice. A letter has been recently received from this company stating that it had completed the installation of ballast tanks to take care of this waste oil instead of pumping it overboard as was the former custom, and that there would be no further cause for complaint. The Audubon Association of the Pacific, the Cooper Ornithological Club and the California Academy of Sciences have fought this indefensible custom so vigorously as to bring about this satisfactory result.

Cooper Club members will be interested in the communication from Mr. W. Leon Dawson, addressed to the Club, as entered in the minutes of the Northern Division (p. 193), and in the Committee's recommendation concerning the subject matter thereof. In accordance with the Committee's suggestion, an understanding has been reached with Mr. Dawson whereby, agreeable to all concerned, the Cooper Ornithological Club as an organization is no longer identified in any way with the "Birds of California" enterprise. We are assured by Mr. Dawson that prospects are favorable for the appearance of the first fascicle in January next, the plan now being to issue the work part by part.

A contribution of a nature to be exceedingly useful in systematic ornithology has just appeared under the authorship of Richard C. McGregor. This is his "Index to the Genera of Birds", issued March 31, 1920, from the Bureau of Science, Manila ("Publication no. 14", 8vo, 185 pp.). This list, of 8839 names, is rendered in compact form by being printed in small yet comfortably distinct type, three columns to the page, and with citations reduced to the barest essentials. By a special limitation of scope only five previous authors are cited, yet it seems practically certain that every genus name proposed up to 1917 is included. Enough information is given in connection with each name to enable the enquirer to find out all about its history. The amount of work involved in an index of this sort must be enormous. For example, the author states that he gathered 25,000 original reference slips,

as an initial step in the compilation. The results give evidence of the highest plane of accuracy. McGregor has thereby won an enviable reputation for achievement in the field of avian taxonomy.

In a review published in the "Transactions of the North Staffordshire Field Club" (vol. lii, 1917-18, p. 97), our British confrere, Mr. F. C. R. Jourdain, makes some timely comments on the standards that should be demanded in modern ornithological work. Compilers of local reports may well take these remarks to heart: "Ornithology must necessarily be a progressive science and what was deemed satisfactory half a century ago ought not to satisfy the student of today. A far higher standard of accuracy and precision is demanded from the recorder of the present day than in time past, and the bald and unconvincing statements, often entirely lacking in detail, which fill the pages of the older writers are now quite out of place. A county recorder must also be capable of discriminating between dubious and unreliable material and dependable observations, and should allow no personal considerations to influence him in accepting or rejecting records."

Northern Division members, and others likely to visit the San Francisco Bay region, should take note that the meetings of that Division are now scheduled for the *fourth* Thursday evening of each month. See announcement on inside back cover of this issue.

If a fair degree of prosperity has been yours this year, share it with the Cooper Club. Make a substantial contribution to our Endowment Fund. Become a benefactor in ornithology.

Collectors should bear in mind that for many reasons the autumn season is the most favorable time of the year for securing specimens. Plumages are then complete and unworn and they present their colors with intrinsic tones unfaded. Then, too, there is no danger of breaking up families, as during the spring months. Remember that adequate value, scientifically, is to be secured from a dead bird, only by recording, in addition to the usual data, its weight, its age (as determined from the condition of the skull), and the colors of the soft parts (by comparison with Ridgway's *Color Standards*).

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

JULY.—The regular meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology the evening of July 15. In the absence of the president and the vice-president, Mr. Storer presided. Those present were: Members: Mesdames Abernathy, Allen, Hendren, Lander, McLellan, Mead, Schlesinger, and Thomson. Messrs. Bell, Carriger, Davies, Evermann, Storer, and Swarth. Visitors: Mesdames Lueddemann, Swarth, and Thomson; the Misses Barron, Bennet, Cowan, Jefferson, Lander, Lane, Latta, Livingstone, MacMillan, McCardle, Potter, Vaughan, and White. Also Messrs. Abell, Bean, and Master George S. Swarth.

The minutes of the June meeting were read and approved. Mr. A. C. Maxson, Mr. Roy B. Lyon, Mr. E. S. Cheney, and Mr. L. A. Elmore were elected members of the club. One name was proposed: Mr. R. Bruce Overington, 220 Golden Gate Ave., San Francisco, by J. Grinnell. There was also a recommendation filed, signed by four members, that Mrs. Florence Merriam Bailey be elected to Honorary membership in the Club.

Informal reports included those of two additional nests of the Western Robin found in the Bay region, one in Golden Gate Park, and one on the Berkeley Campus; also a report of crossbills feeding on aphides at Seattle. A report of the June Seattle meeting in connection with the meetings of the Pacific Division of the American Association for the Advancement of Science was given by Dr. Evermann. The program for the evening consisted of a talk by Mr. Carl Abell on "Color Engraving as Applied to Bird Pictures," using as an example of the complicated process the four color plates used in printing a group of Fox Sparrows as painted by Allan Brooks.

A motion presented by Dr. Evermann provided that the chair should appoint a committee of three to cooperate with the Audubon Association of the Pacific in an effort to bring about the repeal of the Alaska Bald Eagle Bounty Law. The motion was carried, the committee to be instructed to investigate also the movement to commercialize the waters of the Yellowstone. (The committee as appointed later consists of Dr. Evermann, Mr. Storer, and Mr. Lastreto.) Adjourned.—AMELIA S. ALLEN, *Secretary*.

AUGUST.—The regular meeting of the Northern Division was held at the Museum of Vertebrate Zoology, August 19, at 8 P. M. President Wright called the meeting to order. Those in attendance were: Members: Mesdames Allen, Bridges, Davidson, Griffin, Grinnell, Mead, Neugass, Parsons, Roe, Thomson, and Wythe; Messrs. Bell, Carriger, Cooper, Davies, Dawson, Gignoux, Grinnell,

Hill, Lastreto, Loomis, McLean, Mailliard, Storer, Swarth, and Wright; visitors, Mrs. Thomson, Miss Wythe, Mr. Bridges, and Douglass Aiken.

The minutes of the July meeting were read and approved and minutes of May, June and July meetings of the Southern Division were read. Mr. Bruce Overington was elected to membership, and the following names were proposed: Mrs. Edward Hohfeld, 754 3rd Ave., San Francisco, by Mrs. E. C. Pitcher; Mr. Arthur Frank, care of Western Washington Experiment Station, Puyallup, Washington, by Amelia S. Allen; and Miss Eleanor V. Bennet, 2904 Piedmont Ave., Berkeley, by Tracy I. Storer. Elections by the Southern Division in May, June and July were presented and approved. The recommendation presented at the July meeting that Mrs. Florence Merriam Bailey be elected an Honorary Member of the Club was adopted by an unanimous vote, and the secretary was instructed to submit the proposal to the Southern Division for its consideration.

The following communication was then read by the Secretary:

To the Northern Division of the Cooper Ornithological Club,
Mrs. Amelia S. Allen, Secretary;

Ladies and Gentlemen: It has been brought to my knowledge that the Cooper Ornithological Club has been subject to a certain amount of criticism on account of the continued non-appearance of my projected work upon "The Birds of California". This is a regrettable injustice, for such criticism has been in nowise deserved either on the part of the Cooper Club or of its leaders. It is my earnest desire, therefore, to remove at this time any grounds of misapprehension which may exist, both by means of a frank review of our previous relations, and by the elimination of a possible occasion of future misunderstanding.

In the first place, it should be clearly understood that the Cooper Ornithological Club has not now and never has had any slightest responsibility for the business management or the financing of "The Birds of California" enterprise. In my conduct of the business canvass on behalf of this publishing venture, I have scrupulously observed this point, and any misapprehension on the part of the public has been due to unwarranted inference and lack of inquiry. So far as the relations of the Birds of California enterprise and the Cooper Club are concerned, our agreement is vested in the resolutions passed at the November meetings of the Northern and the Southern Divisions of the C. O. C., in 1910, and reported on pages 39 and 40 of the Condor, Vol. xiii, Jan., 1911. It is well to recall the exact language of these reports. The minutes of the Northern Division state:

"...A motion was made by Mr. J. Mailliard, seconded by Mr. W. P. Taylor, that the Cooper Ornithological Club heartily endorse Mr. Dawson's plans, and pledge its moral support and cooperation in the task of preparing a work upon the Birds of California. Motion was carried. A motion was made by Mr. W. K. Fisher, seconded by Mr. H. C. Bryant, that Mr. W. Leon Dawson be granted permission to associate the name of the Cooper Ornithological Club with his own on the title page of the forthcoming work, after the following formula: 'The Birds of California, by W. Leon Dawson with the cooperation of the Members of the Cooper Ornithological Club'."

And the minutes of the Southern Division read:

"On motion by Mr. Willett, seconded by Mr. Shepardson, and duly carried, the Southern Division approved the action of the Northern Division in endorsing the proposal of Mr. W. L. Dawson; and also pledged its moral support and cooperation in the task of preparing a work on 'The Birds of California'. It also approved the decision that Mr. Dawson be permitted to associate the name of the Cooper Club with his own on the title page of the work."

These generous resolutions are plainly concerned with the authorship and scientific sponsorship of the proposed work, and not at all with financing and administration. I have never made any other representations or cherished any other hopes. The Cooper Ornithological Club is in nowise responsible, therefore, for the regrettable delay which has attended the preparation of the MS of "The Birds of California", for the speed of that preparation has always hinged squarely upon the financial support vouchsafed. That the MS has only just now been completed, after incredible difficulties and delays, is in nowise chargeable to the account of the Cooper Club.

In this connection I wish to testify that the Cooper Club has done all that properly lay within its power or province to facilitate the preparation of "The Birds of California". Its generous solicitude for the success of the enterprise has been manifest at every turn and now upon the eve of the hopeful success of that enterprise I wish to record my sincerest gratitude for the use of materials and for privileges unnumbered that have been vouchsafed in generous fulfilment of the Club's early promises. And if in any slightest degree our relationship has failed of its earliest expectation of mutual helpfulness, the fault has been mine through inability to fully appropriate the help offered. (I make solitary exception of cooperative help in picture-making; for when in the early spring of 1917 I was ready, according to program long promised but regrettably deferred, to organize a cooperative campaign of bird-photography, the use of the Condor columns was refused—upon what basis or authority I never clearly understood. The occasion did prove inappropriate, for patriotic reasons, and I mention the circumstance here not by way of animadversion, but in the interest of exact justice.)

Now in spite of the most explicit statements foregoing, I suspect that the ever undiscriminating public will still refuse to dissociate our responsibilities, and so to give the Cooper Ornithological Club the complete exoneration which is its due. In view of this probability I respectfully propose that our official relationship be henceforth dissolved.

I beg the Cooper Club to believe that in suggesting this step I am moved solely by a consideration of its welfare. The Cooper Club has other obligations of immediate moment. I am unwilling that "The Birds of California" should be an endlessly continuing cause, or that its fortunes should embarrass the forward-looking plans of the Cooper Club, whose patience, generous as it is, has been sadly taxed already. It would be grossly unfair of me to hold such generosity to further account.

Whether or not it will be your good pleasure to allow the ultimate use of the Club name upon the title page of "The Birds of California", where it will be very welcome, is a matter for you to decide. But for the present and with the utmost concern for what we conceive to be your real interests, which are alike dear to us, we will discontinue the use of the Cooper Club name in our advertisements and subscription sheets; and we will refer to our deep indebtedness to its officers and members in the past tense.

In conclusion, allow me to express my very deep sense of personal obligation to all who have helped and to those who will continue to help toward the publishing of "The Birds of California". There is not, I am assured, any ill-feeling on the part of any of us. Any little incompatibilities of temperament which may have appeared in a too-closely wedded state will be happily resolved by a larger measure of freedom. At least, so far as I am aware, only genuine goodwill has been manifest on either side. It is only with the hope of entering an even closer personal fellowship of cooperation with the leading ornithologists of the West that I would consent to abrogate a formal relationship fraught with at least the possibility of mutual embarrassment.

Respectfully yours,
W. LEON DAWSON.

Santa Barbara, August 14, 1920.

Mr. Swarth then submitted this report:

At the April, 1920, meeting of the Northern Division of the Cooper Ornithological Club, a committee was appointed, on motion of Mr. Lastreto, "to report at the next meeting as to what support the Club could offer toward encouraging the completion of 'The Birds of California' ". Messrs. Law, Swarth and Evermann were appointed by the chair. The committee gave careful attention to the matter, but has been unable to submit recommendations before this time.

Most careful consideration has revealed no way in which the Club, as such, can assist in an early completion of "The Birds of California". The committee is familiar with the letter that has been presented by Mr. Dawson; it has been supplied with a copy of that letter. Mr. Dawson's proposal, just submitted, the outgrowth of earlier conferences, appears to meet squarely the present situation. It is unfortunate that Dr. Evermann is absent and so could not join in this report, but Mr. Law and Mr. Swarth, acting for the committee, recommend that the Club accept Mr. Dawson's proposal that any official relationship between the Cooper Ornithological Club and the Birds of California Publishing Company be herewith dissolved. The committee also recommends that Mr. Dawson's letter be entered verbatim in the minutes of this meeting.

On motion of Mr. Mailliard, seconded by Mr. Carriger, the recommendation was adopted.

Mr. Lastreto reported work done by the joint committee of the Audubon Association and the Cooper Club dealing respectively with the discharge of oil from oil steamers and with the destruction of Bald Eagles in Alaska.

Mr. Storer reported on attempts to commercialize the waters of the Yellowstone Park and other National Parks and National Forests, recommending that the Club memorialize the Secretary of the Interior and the Federal Power Commission to oppose the establishment of power stations in the National Parks. The motion to this effect, duly seconded, was carried.

On motion of Mr. Carriger it was voted to hold meetings of the Northern Division hereafter on the fourth Thursday of each month.

Business completed, Mr. Swarth gave a report upon his study of the distribution of birds in the Stikine River region. Adjourned.
—AMELIA S. ALLEN, *Secretary.*

SOUTHERN DIVISION

MAY 27, 1920.—Regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at the Museum of History, Science and Art, at 8:00 P. M. President Miller held the chair, with others present as follows: Messrs. Appleton, Bishop, Hanaford, Law, Little, Morcom, Nicholson, Pierce, Rich, Robertson, Ross, Taylor, and Wyman, and Mrs. Law; Mrs. Bishop was a visitor.

Minutes of the April meeting were read and approved. Persons whose names were proposed at the previous meeting were declared elected, on motion by Dr. Rich, seconded by Mr. Robertson. New applications were: Mrs. Anne B. Terry, 935 South Union Ave., and Mrs. Bertha Davis Martin, 1644 Maltman Ave., Los Angeles, both proposed by W. Lee Chambers. The Northern Division submitted the names of Mrs. Mervyn Neugass, Berkeley, Dwight R. Disney, Rupert, Idaho, and T. F. M. Williamson, Pasadena.

Communications from several congressmen were read, acknowledging receipt of the Club's protest against exploitation of a portion of Yellowstone National Park.

The session ended with the usual hour of informal discussion of things ornithological

and oological, during which the Secretary read extracts from a letter from George Willett, dated at Craig, Alaska, where he had wintered and in which locality he had collected extensively. Adjourned.—L. E. Wyman, *Secretary.*

June 24, 1920.—Regular monthly meeting of the Southern Division, Cooper Club, was held at the Museum of History, Science and Art, at 8:00 p. m. In the absence of the entire executive committee Mr. Robertson was acclaimed chairman and Mr. Chambers secretary pro tem. Other members present were Messrs. Dickey, Hanaford, Nokes, L. Peyton, Taylor and Van Rossem. Mr. King was a visitor.

New presentations for membership were: Antonio McLellan, 309 San Francisco St., El Paso, Texas, by H. H. Bailey; Charles Spangler Weiser, 105 West Springettsburg Ave., York, Pa., by W. Lee Chambers; Albert H. King, 3612 No. Griffin Ave., Los Angeles, by D. R. Dickey; and Mrs. H. J. Taylor, 1711 Douglas St., Sioux City, Iowa, by H. C. Bryant.

A letter from Congressman H. Z. Osborne, relative to the Yellowstone Park matter, promising vigilance in protecting the cause espoused by the Cooper Club, was read.

Mr. Dickey presented the following communication:

The death of Mr. Daggett necessitates election of a new custodian for the ornithological library bequeathed to the Southern Division many years ago by Mr. G. H. Chambliss and known as the Chambliss Library.

Mr. Lee Chambers, owing to the fact that he is already caring for certain of the Club's books, manuscripts, field notes, photographs, etc., and to his general knowledge of books of this nature, would seem the logical successor to this custodianship.

I, therefore, nominate Mr. Lee Chambers as Custodian of all books, pamphlets, prints, photographs, manuscripts, etc., which are, or shall become, the property of the Southern Division of the Cooper Ornithological Club, his tenure of this position to be at the pleasure of the Club.

In making this nomination, I further move that, if elected, Mr. Chambers be instructed to formally list all such material as he becomes custodian of (including the Chambliss Library) and submit that report at his early convenience to some subsequent meeting of the Southern Division of the Club, to the end that this list of books, etc., which we hope will be the nucleus ultimately of a complete ornithological working library, may be spread upon the minutes of that subsequent meeting of the Club, and that the members of the Southern Division may know how far this work of accumulation has already progressed.

I further suggest that Mr. Chambers, in case of his election as Custodian, take such measures as he may deem fit to secure the absolute safety of this library while at the same time keeping it as available for reference as is compatible with that safety.

Motion as above by D. R. Dickey, seconded by Dr. Nokes. Carried unanimously.

Adjourned.—W. Lee Chambers, *Secretary pro tem.*

July 29, 1920.—Regular monthly meeting of the Cooper Ornithological Club, Southern Division, was held at the Museum of History, Science and Art, at 8:00 p. m. In the absence of President Miller, Mr. Chambers was acclaimed chairman. Other members present were Messrs. Brown, Colburn, Hanaford, King, Lamb, Law, Nokes, Rittenhouse, Robertson, Taylor, Wall, Wyman; and Mrs. Law. Mr. Coots was a visitor.

Minutes of the May and June meetings were read and approved. On motion by Mr. Robertson, seconded by Mr. Lamb, the Secretary was instructed to cast an electing vote for the parties whose names were proposed at those meetings. New applicants for membership were: C. H. Woodward, 4129 Ingalls St., San Diego, by A. M. Ingersoll; John Hornung, 5219 Wilton Place, Los Angeles, by L. E. Wyman; Mrs. Dudley Baird, 2434 Prospect St., Berkeley; J. Jackson Goodrich, R.F.D. 2, Box 82, Compton; Mrs. Katherine A. Wonser, 4102 Brooklyn Ave., Seattle, Wash.; and William V. Evans, Livingston, Mont., by W. Lee Chambers; Miss Caroline B. Potter, 1314 Alice St., Oakland, by Tracy I. Storer; and Ridley Holleman, 205 Duffield St., San Antonio, Texas, by O. P. Silliman.

Mr. Chambers, as custodian of the Chambliss Library, submitted a report showing titles and number of books in that library. Mr. Robertson moved that this report be accepted, and that the Secretary be instructed to request the Editor of The Condor to publish same at an early date. Motion seconded by Judge Wall. Carried.

Formal business closed, the members indulged in the usual hour of general discussion, and inspection of a tray of hummingbird skins. Adjourned.—L. E. Wyman, *Secretary.*

CATALOGUE OF THE CHAMBLISS LIBRARY, PROPERTY OF SOUTHERN DIVISION, COOPER ORNITHOLOGICAL CLUB

The Auk, vols. 1 to 18, 1884-1901, incl.

A-Birding on A Bronco, Florence A. Merriam, 1896.

American Ornithology (4 vols., complete), Wilson and Bonaparte, 1831.

American Ornithology (3 vols., complete), Wilson and Bonaparte 1832.

Among the Waterfowl, Job, 1902.
Bird Studies, Scott, 1898.
Bird Craft, Mabel Osgood Wright, 1897.
Birds of Ontario (2nd ed.), McIlwraith, 1894.
Birds of New England (10th ed.), Samuels, 1883.
Bird Notes Afield, Keeler, 1899.
Birds of North and Middle America (part 1), Ridgway, 1901.
Birds of the United States, Apgar, 1898.
Birds of Village and Field, Florence A. Merriam.
Bird Life, Chapman, 1898.
The Bird, Michelet, 1869.
Birds and All Nature, vols. 1 to 5, 1896-1899, incl.
Birds That Hunt and Are Hunted, Blanchan, 1899.
British Game Birds and Wild Fowl (2 vols.), Morris, 1897.
Bird Homes, Dugmore, 1900.
Birds of America, vols. 1 to 7, Audubon, 1840-1844.
Bird Neighbors, Blanchan, 1897.
Birds of Kansas, Goss, 1891.
Birds of Song and Story, E. and J. Grinnell, 1901.
Bird-Land Echoes, Abbott, 1896.
Citizen Bird, Mabel Osgood Wright & Elliott Coues, 1898.
Dictionary of Birds, Newton, 1893-96.
Explorations and Surveys for a Railroad Route from the Mississippi River to the Pacific Coast, vols. 1 to 13, incl., 1853-55.
Game Birds of North America (2nd ed.), Elliot, 1897.
Game Birds at Home, Van Dyke.
Geological Survey of California, vol. 1, Land Birds, Cooper, 1870.
Hawks and Owls of the United States, Fisher, 1893.
Key to North American Birds (revised edition), Coues, 1894.
Life Histories N. A. Birds (2 vols.), Bendire, 1892-95.
Land Birds and Game Birds of New England (2nd edition), Minot, 1895.
Lost and Vanishing Birds, Dixon, 1898.
Little Brothers of the Air, Olive Thorne Miller, 1892.
Mind in Nature (Origin of Life and the Mode of Development of Animals).
Methods in the Art of Taxidermy, Davie, 1894.
Natural History of Selborne, White, 2 vols.
Natural History of Selborne, White, 2 vols., 1895.
Notes on the Birds of Minnesota, Hatch, 1892.
Nomenclature of Colors, Ridgway, 1886.
Nuttall's Ornithology, 2 vols., (2 copies), Montague Chamberlain.
New England Bird Life, Coues, 1885.
Nests and Eggs of North American Birds (5th edition), Davie, 1898.
North American Birds, vols. 1-3, 1874, vols. 1-2, 1884, Baird, Brewer, and Rigdway.
Naturalist's Directory, 1884.
Our Native Birds of Song and Beauty (2 vols.), Nehrling, 1893.
The Osprey, vols. 1 to 4, incl.
Our Own Birds, Baily.
Poems of Nature, W. C. Bryant, 1893.
Review of the Birds of Connecticut, Merriam.
Some Common Birds, Silloway, 1897.
Taxidermy and Zoological Collecting, Hornaday.
The Lost Robin, Wetherald, 1907.
The History of Birds, Bingley.
Upon the Tree Tops, Miller, 1897.
The Woodpeckers, Eckstorm, 1901.
Wild Fowl of North America, Elliot, 1898.
North American Shore Birds (2nd edition), Elliot, 1895.
Wilson's American Ornithology, Wilson, vols 1 and 2, Ord, 1828.
Books of Plates, Wilson's American Ornithology, 1829.
Walden, Thoreau, 1897.
Wild Animals I Have Met, Seymour, 1901.
Wood's Natural History.
Manual of North American Birds (2nd edition), Ridgway, 1896.

AUGUST 26, 1920.—Regular monthly meeting of the Southern Division, Cooper Ornithological Club, was held at the Museum of History, Science and Art, at 8:00 P. M. Vice-President Rich officiated, with others present as follows: Mesdames Terry and Law; Messrs. Colburn, Cookman, Hanaford, Hornung, King, Lamb, Law, Nokes, L. Peyton, S. Peyton, Robertson, van Rossem and Wyman. Visitors were Mrs. Nokes, Mrs. Rich, Dr. Terry and Mr. Burn.

Minutes of the July meeting were read and approved, and those of the Northern Division for July and August were read. Applicants whose names had been presented at previous meetings were declared elected, on motion by Mr. Robertson that the Secretary be instructed to cast an electing vote. New presentations were: Ashley M. Walker, 572 Islay St., San Luis Obispo, by O. P. Silliman; Ray B. Lyon, Paso Robles, by Chase Littlejohn; Mrs. Jane F. Easton, La Jolla; Clarence L. Suits, Eagle Rock; and Harold E. Meyers, Medina, N. Y., by W. Lee Chambers; L. A. Elmore, Berkeley, by Mr. Swarth (presented by the Northern Division.

A letter from Mr. W. Leon Dawson, renouncing any official connection of the Cooper Club with the Birds of California Publishing Co., was presented; also, a report of the committee appointed by the Northern Division, in April, relative to this matter. Following considerable discussion, Mr. Robertson moved that the action of the Northern Division in adopting the report of this committee be ratified, and that the letter from Mr. Dawson be published in THE CONDOR [see *antea*]. Seconded by Dr. Nokes. Carried.

Inspection of a tray of shore-bird skins, and an account by Mr. Sidney Peyton of recent experiences on Forrester Island, where he spent some weeks with George Willett, completed the evening. Adjourned.
—L. E. WYMAN, *Secretary.*

For Sale, Exchange and Want Column.—**Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of ten cents per line. For this department, address W. Lee Chambers, *Eagle Rock, Los Angeles County, California.***

The Cooper Club has just fallen heir to the following publications which may be of interest to its members. We are quoting them at prices that just about cover trouble and expense of mailing.

The Story of the Farallones, Barlow, 1897 ..... 20c
Birds of the Santa Barbara Islands, Grinnell, 1897 ..... 50c
Birds of Los Angeles County, Grinnell, 1898 ..... 20c

Address W. Lee Chambers, *Business Manager, Eagle Rock, Los Angeles, Calif.*

Wanted.—I will pay cash for Jas. H. McClintock's "History of Arizona".—Earle R. Forrest, *261 Locust Ave., Washington, Penn.*

Wanted.—Nidiologist, vol. i, nos. 2, 5, 6. Osprey, vol. i, nos. 2, 4, 6; vol. ii, no. 5; vol. iii, nos. 9, 10; vol. iv, no. 8; vol. v, no. 9, index; vol. i (new series), nos. 4, 5, 7. Ornithologist and Oologist, vol. vi, nos. 5, 7, 8, 9, 10; vol. vii, nos. 15, 16, 20-24; vol. viii, nos. 1, 3, 4, 7, 9, 10, 11. Will purchase at reasonable price.—Benjamin Adams, *Wethersfield, Conn.*

Splendid Opportunities for study and for contact with advanced students are open to young men or women who have mastered the art of skeleton preparation. Those skilled in this work are in constant demand in museums and universities. Our methods are yours for the asking.—J. Eugene Law, *Curator in Osteology, Museum of Vertebrate Zoology, Berkeley, Calif.*

Wanted—Ridgway's "Birds of North and Middle America", vols. 2 and 3; paper covers preferred; must be in good condition. Will pay reasonable cash price.—F. Seymour Hersey, *Taunton, Mass.*

Wanted—Will pay cash or exchange for Auk, vol. 5, no. 4; American Ornithology, vol. 6, nos. 1, 2, 3, 4, 6, 7; Ornithologist and Oologist, vols. 6 and 7, complete, vol. 11, nos. 2, 3, 4, 5, 6, 7, 8, 10, 11; vol. 12, nos. 8, 9, 10, 11; Maynard's Birds of Eastern North America; McIlwraith's Birds of Ontaria, 2nd edition.—H. H. Johnson, *Pittsfield, Maine.*

Wanted—North American Fauna, nos. 4, 5, 7, 16, 17, 19, 20, 21, 25, 27, 28, 30. For any of these I will pay a reasonable price.—Alex. Walker, *Blaine, Oregon.*

I want odd volumes of Proceedings of the Biological Society of Washington.—W. Lee Chambers, *Eagle Rock, Los Angeles, Calif.*

Central American Bird Skins—I will be pleased to correspond with anyone who might be interested in general collections from Guatemala and Costa Rica, and later on from Panama. The quality of this material cannot be surpassed.—Austin P. Smith, *care of American Consulate, San Jose, Costa Rica.*

Auks Wanted—I have a nearly complete set, but lack the first two volumes, 1884 and 1885. Also lack Bulletin Nuttall Ornithological Club, vol. 1, no. 2; vol. 2, no. 3. If you have any of the above to spare, please let me know about it. R. C. McGregor, *Bureau of Science, Manila, P. I.*

MEETINGS OF THE COOPER ORNITHOLOGICAL CLUB

Northern Division: 8 p. m., fourth Thursday of month, at Museum of Vertebrate Zoology, University of California, Berkeley. Take any train or car to University Campus. The Museum is the corrugated iron building on south side of campus just north of football bleachers.—Mrs. Amelia S. Allen, *Sec'y, 37 Mosswood Road, Berkeley, Calif.*

Southern Division: 8 p. m., last Thursday of month, at Museum of History, Science, and Art, Exposition Park, Los Angeles. Take "University" car south on Spring St., or "Vermont and Georgia" south on Hill. Get off at Vermont and Thirty-ninth, and walk two blocks east to Exposition Park. The Museum is the building with the large dome.—L. E. Wyman, *Sec'y, care of Museum.*

Intermountain Chapter: Get date and place from the Sec'y. Ashby D. Boyle, *351 5th Ave., Salt Lake City, Utah.*

San Bernardino Chapter: Get date and place from the Sec'y. M. French Gilman, *Banning, Calif.*

THE CONDOR

A Magazine of Western Ornithology

Volume XXII November-December, 1920 Number 6

COOPER ORNITHOLOGICAL CLUB

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Issued December 4, 1920

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[Issued December 4, 1920]

THE WING CLAW IN SWIFTS

By ALEXANDER WETMORE

IN a paper on "The Claws and Spurs on Birds' Wings", Jeffries (Proc. Boston Soc. Nat. Hist., xxi, 1881, pp. 301-306) recorded in a tabular survey of the occurrence of wing claws in birds that the wing claw was present in the Old World swifts of the genus *Micropus* and that no wing claw was found in the Chimney Swift (*Chaetura pelagica*).

A brief examination of a series of Chimney Swifts showed the present writer that this species possessed well developed wing claws so that what had appeared to be another character separating the two subfamilies of spiny-tailed and soft-tailed swifts proved invalid. Opportunity was taken in this connection to examine for this character all of the species of swifts available in the collections of the United States National Museum with results that proved of some interest. In all, 48 species belonging to 12 genera were available, as indicated in the following list.

In arranging my notes on these swifts I have encountered difficulty in the arrangement, treatment and choice of names to be used; for there have been varying opinions as to the limits of groups and the allocation of subspecies, while no recent comprehensive monograph has covered the entire family in a manner wholly satisfactory. In general the arrangement of the genera is that given by Mr. Ridgway (Bull. 50, U. S. Nat. Mus., v, 1911, pp. 685-686), with the inclusion of *Tachynautes* (Oberholser, Proc. U. S. Nat. Mus., xxviii, 1905, p. 860), while the majority of the species are taken as they stand in Sharpe's Hand-List (vol. ii, 1900, pp. 89-96). The genus *Collocalia* is based on Oberholser's monograph of this group (Proc. Acad. Nat. Sci. Phila., vol. 58, 1906, pp. 177-212), save that the treatment of *Collocalia fuciphaga*, *C. vestita*, and *C. lowi* is that of Streseman (Verh. Orn. Ges. Bayern, Bd. xii, 1914, pp. 1-12). New species and subspecies not covered by these authors are included in what appears to be their logical positions. The writer does not venture to say that

the combination produced is a happy one, but believes that it will at least enable others to determine what birds he has seen.

Micropus melba (Linnæus)
Micropus aequatorialis (Müller)
Micropus apus (Linnæus)
Micropus pacificus (Latham)
Micropus horus (Heuglin)
Micropus affinis (J. E. Gray)
Micropus subfurcatus (Blyth)
Micropus andicola (Lafresnaye and D'Orbigny)
Micropus myoptilus (Salvadori)
Aeronautes melanoleucus (Baird)
Panyptila sanctihieronymi Salvin
Panyptila cayanensis (Gmelin)
Tachynautes parvus (Lichtenstein)
Tachornis infumatus (Sclater)
Tachornis phoenicobius Gosse
Hirundapus celebensis (Sclater)
Hirundapus caudacutus (Latham)
Hirundapus giganteus (Temminck)
Mearnsia picina (Tweeddale)
Streptoprocne zonaris (Shaw)
Streptoprocne semicollaris (Saussure)
Nephoecetes niger (Gmelin)
Cypseloides brunneitorques (Lafresnaye)
Cypseloides cherriei Ridgway
Chaetura pelagica (Linnaeus)
Chaetura vauxi (Townsend)
Chaetura richmondi Ridgway
Chaetura gaumeri Lawrence
Chaetura acuta (Gmelin)
Chaetura poliura (Temminck)
Chaetura cinereiventris Sclater
Chaetura stictilaema (Reichenow)
Chaetura leucopygialis (Blyth)
Collocalia innominata Hume
Collocalia ocista Oberholser
Collocalia fuciphaga fuciphaga (Thunberg)
Collocalia fuciphaga vanikorensis (Quoy and Gaimard)
Collocalia fuciphaga amelis Oberholser
Collocalia fuciphaga unicolor (Jerdon)
Collocalia vestita vestita (Lesson)
Collocalia vestita mearnsi Oberholser
Collocalia vestita elaphra Oberholser
Collocalia vestita aenigma Riley
Collocalia origenis Oberholser
Collocalia lowi lowi (Sharpe)
Collocalia lowi palawanensis Stresemann
Collocalia inopina Thayer and Bangs
Collocalia thespesia Oberholser
Collocalia francica townsendi Oberholser
Collocalia francica inexpectata Hume
Collocalia francica germani Oustalet
Collocalia troglodytes G. R. Gray
Collocalia marginata Salvadori
Collocalia linchi affinis Beavan
Collocalia linchi elachyptera Oberholser
Collocalia linchi isonota Oberholser
Collocalia linchi oberholseri Stresemann
Collocalia dodgei Richmond
Collocalia esculenta (Linnaeus)
Collocalia bartschi Mearns

The wing claw in the Micropodidae is placed near the tip of the thumb or pollex and is concealed beneath the feathers that form a sharp anterior margin on the wing at that point. The large series of birds studied were examined under a binocular dissecting microscope with a magnification of eight diameters. The use of this instrument left both hands free to manipulate the bird, a necessary arrangement, as the claw is small and at times difficult to locate among the feathers. The claw in general is blackish or dusky in color, and is comparatively long, with the tip recurved in a slight hook. It is attached rather loosely and may be removed easily, but where a claw has been broken away, its former location is plainly indicated by a scar. The form of the claw varies to some extent, and in abnormal individuals it may degenerate into a short knob with slight projection.

In all of the swifts examined wing claws were normally developed save in one group of species belonging to the genus *Collocalia*. In the various subspecies of *C. linchi* the wing claw was normal in some cases, rudimentary in others, and occasionally was absent on one or both wings. The same was true in a

series of nine *C. esculenta.* The wing claw was much reduced in seven *C. troglodytes* and in one specimen was absent on one wing. In *Collocalia marginata* no trace of a wing claw was found in an examination of both wings of nine individuals, and wing claws were absent also in the type of *C. dodgei* (the only specimen of this species seen). Wing claws were present in the type specimen of *C. bartschi.* In the other species of *Collocalia* available (*C. innominata, ocista, fuciphaga, vestita, origenis, lowi, inopina, thespesia,* and *francica*) wing claws were present on both wings, though occasionally they were small and often were curled and twisted. In one individual of *C. f. amelis* the wing claw on the right wing grew from the base of the pollex instead of the tip. The wing claw may possibly develop rather late in the growth of the young bird, as I found it absent entirely in three nestlings of *Collocalia l. isonota,* but present in both wings in a fully fledged young of *Collocalia origenis.* It is interesting to note that in the Tree Swifts (Hemiprocnidae), a family considered to be closely allied to the true swifts (Micropodidae), no wing claw is present. The species examined include *Hemiprocne longipennis, mystacea, comata, wallacei* and *perlonga.*

While it has proved that the wing claw in the Micropodidae is not a character of taxonomic value it has been interesting to note its persistence in general and its absence in certain cases. The section of edible nest swiftlets, covering the small blue-black species with more or less white in the plumage, seems to be on the way to discarding the wing claw, though here the loss is not as yet universal and may vary in one species or even in one individual. From the present evidence I am inclined to consider the wing claw in swifts as an archaic trait that is no longer of value and is on the way to being lost. There is no evidence at hand to show that the claw is used by these birds in attaching or climbing on the rough surfaces on which they rest. No wear is evident on the wing claw itself, nor is there abrasion on the feathers concealing it.

From a limited amount of material (all in dried skins) it seems that the wing claw does not appear until the young bird is well feathered, so that it is not of use in a juvenile stage. This, however, should be carefully verified in fresh material for, if this claw be considered an archaic character, it is strange if it does not appear very early in the life of the individual.

Biological Survey, Washington, D. C., May 26, 1920.

NESTING OF THE OLIVE-SIDED FLYCATCHER IN BERKELEY, CALIFORNIA

By JOSEPH DIXON

WITH THREE PHOTOS

THE OCCURRENCE of the Olive-sided Flycatcher (*Nuttallornis borealis*) in the San Francisco Bay region in summer has been noted by a number of observers (for example, Fisher, Condor, VI, p. 108; Grinnell, Condor, XVI, p. 32; and Hansen and Squires, Condor, XIX, p. 60). While this boreal species has thus already been regarded as a breeding bird of the Bay region, yet exact breeding evidence in the form of nests, eggs or young appears to be lacking. Through the interest and initiative of Donald D. McLean, a Cooper Club member, definite breeding data is now available, he having discovered the nest and eggs now to be described.

Fig. 38. NEST SITE OF OLIVE-SIDED FLYCATCHER IN MONTEREY CYPRESS. THE TAIL OF THE FEMALE, ON THE NEST, SHOWS AS A BLACK DOT AT THE POINT WHERE THE MARGINAL ARROWS WOULD INTERSECT.

On June 12, 1920, a set of four slightly incubated eggs of the Olive-sided Flycatcher, together with the nest attached to the limb supporting it, and accompanying photographs, were secured by Mr. McLean and the writer from a slender Monterey cypress that stands on the south-facing hillside just north of the Claremont Hotel, in Berkeley. The birds had started a nest in an adjoining cypress, but for some unknown reason they had abandoned it and moved to the new location. The nest was placed fifty-seven feet above the ground, by actual measurement, and thirty inches from the tip of a long slender upper branch of a broken-topped cypress. The situation was exposed, but

the brooding bird was partially screened from above by an overhanging branch. The nest was firmly ensconced on top of a cluster of twelve cypress cones, the main limb itself at this point being insufficient, as it was only one-half inch in diameter. The foundation of the nest consists of dead bare cypress twigs and a few dry grass stems. It is lined with fine dry pine needles, stiff fibrous rootlets, and horsehair. The outside dimensions of the nest are 6x6½x2½ inches (15.3x16.5x6.5 centimeters) and the inside dimensions, 3½x3¾x1½ inches (9.0x9.5x3.8 centimeters). The four eggs measure 23.0x16.5, 22.5x 16.9, 22.2x17.0 and 22.6x 17.0 millimeters, respectively. The ground color of the eggs is normal for the species, being light ochraceous-salmon, but the markings of the eggs are odd. Instead of being wreathed about the larger end with clusters of fairly well defined spots, all four eggs have a single heavy splotch or smudge, six by ten millimeters in extent in one case, on one side or surface of the egg, while the opposite surface is practically unmarked. These splotches are light vinaceous-drab, fading about the edges to cinnamon-rufous (these color names from Ridgway, 1912). The set appears either very handsome or plain according to the position of the eggs when viewed. When first observed in the nest the plain aspects of the eggs were most in view.

Fig. 39. THE NEST WAS FIRMLY ENSCONCED ON TOP OF A CLUSTER OF TWELVE CYPRESS CONES. IT WAS PLACED THIRTY INCHES FROM THE TIP OF A SLENDER UPPER BRANCH OF THE BROKEN-TOPPED CYPRESS.

A bare dead branch of a nearby eucalyptus was the favorite perch of the pugnacious male, and his duty seemed to be quickly to put to rout any luckless bird that happened to come within twenty-five feet of the nest. Excreta picked up below this favorite perch were found to consist almost entirely of chitinous remains, mandibles and elytra, of insects, chiefly beetles. The dried remains of several blow-flies were found on the edge of the nest, crumbs fallen, as it

were, from the female flycatcher's feeding tray—if she was in truth fed there by the male.

We had hoped that the birds would nest in such a place that a series of photographs illustrating the life history of this species could be secured; but the slender nest branch swaying about in the wind, the distance of the nest

Fig. 40. The foundation of the nest consisted of bare dead cypress twigs and a few dry grass stems. It was lined with fine dry pine needles, stiff fibrous rootlets and horsehair. All four eggs were well marked on one side or surface, but were plain on the other.

from the tree trunk, and the clouds of smoke and soot from the nearby hotel, proved too serious handicaps, and the life series idea had to be abandoned. Through the generosity of Mr. McLean the four eggs together with the nest now constitute accession no. 1783, recorded as a gift from him, in the University of California Museum of Vertebrate Zoology.

Berkeley, California, June 15, 1920.

FROM FIELD AND STUDY

The Probable Breeding of the Aleutian Tern in Southeastern Alaska—a Query.—A record in the May, 1920, number of THE CONDOR (page 111) of the probable breeding of the Aleutian Tern near Yakutat appears to rest on "sight" identification only, and the actions of Mr. Walker's birds were so different from the usual habits of this species that I am forced to doubt if the birds seen really were Aleutian Terns.

Sterna aleutica has always been a decidedly rare bird, and authentic eggs have been taken in North America at three places only. A single egg was taken by Bischoff on Kadiak Island in 1868 together with the parent which is the type of the species; but since that date it has not been found breeding in southeastern Alaska, and the supposition that it bred in the Aleutian Islands (which was responsible for the bird's name) has not been substantiated by any of the ornithologists who have visited the chain. Mr. E. W. Nelson was the next ornithologist to take eggs. During his stay at St. Michael from 1877 to 1881 he found two breeding colonies. One was on an island in St. Michael Bay and the other on a small island near the village of Kegikhtowik about eighteen miles away. Nearly all the islands in this region are rocky and rise abruptly from the sea or else are low and marshy. The two islands where these terns breed are of a different character, rising from the sea in a sharp incline for some 25 or 30 feet and being level on top, or fairly so, with a covering of dry matted grass and moss. Apparently these birds require this type of nesting ground.

No one seems to have found the Aleutian Tern breeding in North America since Mr. Nelson's records were published until 1915 when the present writer visited St. Michael and collected eggs on the island in St. Michael Bay.

There are a number of supposed eggs of this species in American collections taken by a whaling captain on Stuart Island. These eggs I believe are eggs of the Arctic Tern; at least all that I have seen show none of the characteristics that render the eggs of the Aleutian Tern distinguishable at a glance from those of *Sterna paradisaea*.

There are certain ways in which the Aleutian Tern can be identified in life with certainty. The best field mark I consider to be its voice. The usual note is a three syllabled whistle suggesting one of the small sandpipers (*Ereunetes*) and not in the least tern-like. I heard the harsh grating note that other terns use, but once, and that was from a wounded bird. The second distinguishing characteristic is its habitual shyness. Even when a person is walking over its nesting ground the birds usually keep out of gun range and it is rare for them to dart down at one's head. I never had an Aleutian Tern strike my head although this is a common habit with the Arctic Tern. Even a wounded bird on the ground, which will usually attract other species of terns, only serves to draw this shy bird a little nearer. It took me a number of visits of several hours each to collect a small series of these birds, while the same number of Arctic or Common Terns could be taken in any colony in a few minutes. *Aleutica* can be distinguished from *paradisaea* by its flight, but this distinction is less noticeable except upon direct comparison between the two species. *Aleutica* has slower wing beats and there is a certain lack of directness about its flight that once learned is diagnostic. In general appearance the Aleutian Tern seems larger and darker colored than the Arctic, but these impressions are often lost in poor light. The white forehead and black feet and bill, so noticeable in the bird in the hand, can be seen in life under exceptional light conditions only.

There is one way in which the Arctic Tern might be confused with the Aleutian Tern by a person who was not familiar with the latter species. In a certain stage of plumage, summer specimens of *paradisaea* show considerable white on the forehead. This plumage was described many years ago under the name *Sterna portlandica* and probably represents birds one year old that, because of deficient vitality, or from some other cause, have failed to acquire the full nuptial plumage at the spring molt. This plumage is somewhat rare and many colonies show no birds in this stage, but I have seen others which contained a considerable number of these, so-called Portland Terns. I believe it is not definitely known if birds in this plumage breed; but such birds in a colony might act as described by Mr. Walker and their markings lead to the impression

that they were Aleutian Terns. I have even known of several of them having been collected for this species and their identity not discovered until some time later.

In view of the above facts it seems as if the probable breeding of the Aleutian Tern in southeastern Alaska is open to doubt unless specimens of the birds were actually taken.—F. Seymour Hersey, *Taunton, Massachusetts, August 14, 1920.*

Comments upon the Safety of Sea Birds and upon the "Probable" Occurrence of the Northern Bald Eagle in California.—In The Condor for May-June, 1920, appear two articles upon which the undersigned seeks the privilege of commenting.

The article by J. Grinnell on page 101, entitled "The Existence of Sea Birds a Relatively Safe One," appears to the writer, after a number of years careful study of this very question, to be most timely and accurate and not open to any criticism whatever. The only reason for taking up the matter here is a desire to enlarge somewhat on the theme of the original article.

We are all familiar with the frequent allusions to the "sea birds killed by storms" that have appeared in print in times past. A number of years ago the writer began to visit the California beaches after severe storms, expecting to find dead and crippled sea birds plentiful. This was not found to be the case, however, and, after several years observation along the beaches and the examination of hundreds of dead birds, the conclusion was arrived at that the storms have nothing whatever to do with the birds found dead along shore. In fact the greatest numbers of dead birds were noted at times when there had been no storms for weeks. Another point to be considered is that birds killed or crippled by storms blowing on-shore would still be fat when they reached the beach. On the contrary, a great percentage of the shearwaters, fulmars and other birds found dead along our beaches are in a more or less emaciated condition, evidence that they died of disease. Furthermore, in many cases their internal organs were swarming with parasites. It is the writer's belief that sea birds, particualrly those that migrate in companies, are at times subject to epidemics to which large numbers succumb and that this fact is responsible for the numbers of dead birds on the beaches at certain times, storms having nothing whatever to do with it.

The most striking example known to the writer of the ability of sea birds to withstand severe weather conditions is that of the young of the Ancient Murrelet (*Synthliboramphus antiquus*). At midnight, with the aid of the light of a lantern, the writer has watched these downy chicks, not more than three or four days old, dive through the surf in response to the cry of the parent bird and head out to sea into the teeth of a southeasterly gale, and this at a time when boulders weighing a hundred pounds or more were being rolled up and down the beach like so many pebbles. Furthermore, all evidence points to the fact that these young birds remain on the open sea many miles from land until fully grown, in spite of the fact that in this latitude severe gales are frequent through the summer months. In eight seasons spent in this region the writer has never seen a young murrelet anywhere near the shore after it had once taken to the water. In fact, the half-grown young had never been noted at all until this season (1920), when, on July 21, A. M. Bailey and the writer secured a pair of adult birds and a pair of young about two-thirds grown in the middle of the channel between Forrester and Dall islands, ten or twelve miles off-shore.

The second article upon which the writer desires to comment is the one by Mr. J. H. Fleming, entitled "The Northern Bald Eagle as a Probable Californian Bird" (page 110). Now, with all due regard to the high ornithological standing of the author of this note, it seems to the writer that the evidence submitted is far too inconclusive to serve as a basis for recording the Northern Bald Eagle as a "probable" Californian bird.

Let us consider briefly the evidence as presented. In the beginning of the article Mr. Fleming states that the Northern Bald Eagle "should occur at least as a migrant". This statement is made arbitrarily without presentation of any facts tending to show that the Northern Bald Eagle in the southwestern portion of its range is to any extent migratory. The writer, whose experience with this bird in southeastern Alaska covers a period of eight years, finds that it is, in the extreme southeastern part of Alaska at least, resident throughout the year, being fully as abundant in winter as in summer. Near Craig, Prince of Wales Island, during the winter of 1919-20, several pairs of birds

were noted that remained in the vicinity of their nests throughout the entire winter, eggs being laid in April.

As to the difference of a few millimeters in wing length: How much value should be attached to this feature in considering an individual of a race known to show such a vast amount of variation in size, individually? The writer has measured several extra small adult birds killed in southeastern Alaska that, if considered from point of size alone, would necessarily have to be referred to the southern form. It is improbable that any CONDOR reader would consider even momentarily the recording of the southern bird from Alaska on this evidence; so, would not the old saying "It's a poor rule that won't work both ways" pertain to this case?

The fact is that there is no hard and fast line of demarcation between the two forms of the Bald Eagle. The size difference is only an *average* difference. The northern form *averages* larger than the southern form, and individual variants may be found within the known range of either form that, if considered from a standpoint of size alone, could be referred to the other subspecies.

In view of these facts it seems to the writer that the preponderance of evidence points to the fact that Mr. Fleming's Lakeport bird is an unusually large individual of the Southern Bald Eagle (*Haliaeetus leucocephalus leucocephalus*) and may not be properly considered as demonstrating even the "probable" occurrence of the northern form in California.—G. WILLETT, *Forrester Island, Alaska, August 5, 1920.*

Eastern Fox Sparrow at Seattle.—On February 15, 1920, at Renton, a small town a few miles southeast of Seattle, Washington, a typical Eastern Fox Sparrow (*Passerella iliaca iliaca*) was secured as it fed in a thicket bordering an open field with a miscellaneous gathering of Rusty Song Sparrows and Oregon Towhees. Even before it was shot its dissimilarity to the several subspecies of Fox Sparrows that occur here was easily noticeable, and once in the hand there was no question as to its identity. This is as far as I know, the first record for this species for the state of Washington. The specimen itself is now in the collection of Mr. D. E. Brown, of Seattle.—THOS. D. BURLEIGH, *Pittsburgh, Pennsylvania, September 6, 1920.*

The Yellow-headed Blackbird Flocking with Brewer Blackbirds.—While passing through Lake Valley on August 12, 1920, about two miles north of Meyers, El Dorado County, a flock of about seventy-five Brewer Blackbirds (*Euphagus cyanocephalus*) flushed from the road and flew to a lodgepole pine tree in the adjoining field about a hundred yards distant. In their midst was a single Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) showing in striking contrast. I took the bird, which proved to be a young male.

The Yellow-headed Blackbird is frequently associated with Red-winged Blackbirds, and Coues (Birds of the Northwest, 1874, p. 190) mentions them flocking with Cowbirds, but its presence with Brewer Blackbirds seems rather unusual, and all the more strange as there were no Redwings seen in the vicinity.—FRANK N. BASSETT, *Alameda, California, August 27, 1920.*

Note on the Nesting Habits of the Osprey in Yellowstone Park.—On the spires of rock which stand up perpendicularly from the steep sides of the Canyon of the Yellowstone River in the Yellowstone National Park are a large number of nests of the Osprey (*Pandion haliaetus carolinensis*). All nests observed from the side of the canyon were without any shelter or protection of any kind. They were great collections of sticks resting on the rock, and apparently a new nest was built on top of the nest of the preceding year or years. At the time of our visit to the Yellowstone, in July, 1920, a young bird was observed flopping about in one nest, and an adult bird was standing on the side of the nest with the back to the sun so as to project its shadow directly into the nest. We watched this nest for fully an hour and during all that time the adult bird's shadow was thrown into the center of the nest. The parent bird was clearly keeping the young in the shade. During all the time of the observation the sun was shining brightly and the weather was warm.—CLAUDE GIGNOUX, *Berkeley, California, September 8, 1920.*

Some Nesting Habits of the Pied-billed Grebe.—There seems to be some uncertainty among authorities as to the sitting habits of the Pied-billed Grebe (*Podilymbus podiceps*). I was fortunate enough, on June 9, 1920, to surprise one of these birds on its nest in such a way as to prove, to my own satisfaction at least, that it was incubating its eggs in normal fashion.

I was driving along the county road from Firebaugh to Merced, California, watching the bordering tule patches closely, when I saw one of these grebes sitting. I stopped my machine and immediately the bird became suspicious, but did not move. Undoubtedly she had become used to automobiles passing. There was a small pond in the ditch by the roadside and in this the nest was floating. It was not more than twelve or fifteen feet from me and the black band across the bird's bill was easily noticeable.

My son and I watched her for several minutes, all of us remaining motionless. Then the boy left the car on the farther side without the grebe having seen him. When he came around the end of the auto and she could see him she immediately slipped into the water.

As she half rose preparatory to leaving, I could see her eggs, very clearly and distinctly. But the most interesting thing was to watch her cover them. Her body moved without a pause, yet the bird contrived to take three quick pecks at the sides of her nest, pulling the material in her bill under her body. The time consumed was about twice what a chicken would take to peck three mouthfuls from a feed bin; approximately two seconds, I estimate. In any event there was no perceptible time lost. She seemed to leave the nest as easily and as quickly as any other bird. But when we reached it, not a speck of any part of her six eggs was visible.

Mr. Bent (page 42 of his "Life Histories of North American Diving Birds") states that the young "cling tenaciously to the parent bird while she dives and brings them up again." On June 25, 1919, I saw a Pied-billed Grebe with three young that could hardly have been more than 24 hours old. When I first noticed them the babies were sitting on the mother's back, a very pretty sight. At my approach she dove and left them bobbing on the surface of the water like so many corks. She came up a few yards away and at once they all swam to her and climbed aboard. This process was repeated several times and not once was one of the babies dragged under at all.

I must apologize for my use of the pronoun "she". Of course I had no means of knowing the sex of the parent bird in either of the above cases.—Griffing Bancroft, *San Diego, California, September 12, 1920.*

The Orange-crowned Warbler a Possible Winter Resident at Seattle, Washington.—Although until the past winter, 1919-20, there were only a few spring and fall records for the Orange-crowned Warbler (*Vermivora celata*) on the Puget Sound, it seems now as if the status of this species about Seattle may have to be decidedly changed. It was on December 26 that I secured the first specimen and in the next two months five others were seen, three of which were collected. All were invariably found feeding singly with restless wandering flocks of Kinglets and Chickadees, and being quiet and inconspicuous more were probably overlooked than were actually recorded. The dates on which they were seen were December 26, one bird, January 31, one bird, February 9, one bird, February 13, two birds, and February 27, one bird. Whether this species has merely been overlooked, or whether this winter saw an unusual invasion of these birds, remains for the future to decide. Of the four birds taken, one was sent to the Biological Survey for identification and was returned marked as a separate subspecies of the Orange-crowned Warbler that as yet has not been recognized by the A. O. U., for which reason I have used the specific name. All of them are now in the collection of Mr. D. E. Brown of Seattle.—Thos. D. Burleigh, *Pittsburgh, Pennsylvania, September 6, 1920.*

Notes on the Calliope Hummingbird.—The writer spent the week from June 18 to 25 at Seven Oaks, in the San Bernardino Mountains, elevation 5200 feet. This proved to be just at the height of the mating season of the Calliope Hummers (*Stellula calliope*), which were feeding abundantly on a species of "paint-brush" that grew rankly in a small hillside cienaga just above the cabins.

While the birds were shy when I moved about openly, they were quite otherwise when I stood or sat quietly beside a clump of willow or an oak-scrub that grew in the locality. From these screens I watched the birds by the hour, at all distances from thirty yards to four feet or less. Dozens of times individuals appeared from nowhere, apparently, and disappeared in like manner, their flight so bullet-like that the eye could hardly follow them. Numerous times I watched females preening on a twig less than six feet distant, but did not see a male thus engaged.

Ordinarily the Black-chins, of which a few haunted the same locality, would drive the Calliopes unmercifully. Once, however, a male Calliope shot close beside me up the hillside, just grazing the grass-tips, driving at a Black-chin that was quietly feeding. Within two feet of the latter he mounted vertically about thirty feet, then dropped like a plummet on the feeding bird, and both flashed down the hill-side with Calliope doing the chasing.

The courting antics of the species likewise received close attention. On one occasion an angry buzzing, almost terrifying in volume, resolved itself into a pair of these birds holding to each other's beaks and revolving like a horizontal pinwheel, *less than four feet from my eyes.* Around they went, a half-dozen times, then parted, the female perching and preening on a twig of the oak-scrub just beyond arm's reach, with the male two feet farther away and giving vent at three-second intervals to an explosive, metallic *tzing.* This was, of course, made with the wings, but the bird was sufficiently screened so that I could not see it clearly.

On another occasion a female sat preening on a horizontal dead weed, when a male shot up the hill-side close to the ground, passed the female, mounted about twenty-five feet and darted down again in a long, narrow, vertical ellipse that flattened where it touched the hill-side. As he passed the female she fluttered and swung head downward on her perch. The male alighted above her, with vibrating wings, and coition took place in this position.

Of seven females taken, one secured on June 19 held a half-developed ovum; two others, taken on this date and two days later, showed slightly developed ova, and the others were still farther from the laying stage. Other females were observed on June 23 and 24 gathering spider-webs about the cabins.—L. E. Wyman, *Museum of History, Science and Art, Los Angeles, October 2, 1920.*

EDITORIAL NOTES AND NEWS

Honorary membership in the Cooper Ornithological Club has, by action of both Divisions, been conferred upon Florence Merriam Bailey (Mrs. Vernon Bailey). This recognition is based upon Mrs. Bailey's record as an accurate observer of living birds, and upon her marked literary ability in putting into permanent and pleasing form much of high value relative to the life histories of the birds of the western United States. She became an Active member of the Club in 1910 and a Life member in 1919. She has always been a loyal supporter of the purposes of the Club, for instance as evidenced by the numerous articles contributed by her to The Condor.

The present Honorary membership roll of the Cooper Club contains seven names: Robert Ridgway, elected in 1905; Henry W. Henshaw, 1909; C. Hart Merriam, 1909; J. A. Allen, 1910; Frank Stephens, 1912; Edward W. Nelson, 1917; and Florence Merriam Bailey, 1920. Each of these ornithologists has been identified importantly with the development of the ornithology of western North America.

The W. Otto Emerson collection of bird skins, numbering about 5500, has been purchased for the California Academy of Sciences by two public-spirited members of that body, Messrs. John W. Mailliard and W. H. Crocker. This collection consists largely of birds gathered by Mr. Emerson himself during the past forty years in Alameda County, California. Its local value is therefore great, and it is gratifying that its permanent preservation is now assured in a place to which bird students in the San Francisco Bay region can have easy access. A number of rarities are included, such as "record specimens" of species which have been obtained but once or twice on the Pacific Coast or in California. There also goes into the possession of the Academy of Sciences the original manuscript of Cooper's *Ornithology of California* (1870), and that of Cooper's *Birds of Washington Territory* (1860). These had been salvaged from the effects of Dr. Cooper by Mr. Emerson many years ago, shortly after the former's death.

The large reading public reached by the "International Feature Service" through the

Sunday supplements of many newspapers is served from time to time with highly-seasoned half-portions of natural history, stimulative to the imagination perhaps, but not often over full of nutriment in the way of truth or fact. Here is a "rich" sample of ornithology which appeared recently under the authorship of "Dr. W. H. Ballou":

"All migrating water birds, so far as we know, carry safely beneath their feathers little conch shelled animals for food in flight. Without pausing, by a slight twist of the head which shall not upset the centre of gravity, the bird swipes a shell or two when hungry instead of alighting for a table d'hote dinner. Of all fliers, the upland plover loads itself with the largest number of shells, making probably the longest and most sustained migrations of all water-wading birds."

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

SEPTEMBER.—The regular meeting of the Northern Division of the Cooper Club was held at the Museum of Vertebrate Zoology, September 23, at 8 P. M. President Wright presided, and the following members were present: Mesdames Allen, Ames, Baird, Bamford, Bridges, Ferguson, E. Ferguson, Griffin, Grinnell, Kibbe, Law, McLellan, Mead, Neilson, Neugass, Newhall, Randolph, Rush, and Thomson; Messrs. Bell, Cooper, Cox, Davies, Dixon, Elmore, Evermann, Gignoux, Grinnell, Hill, Kibbe, Law, McLean, Storer, Wheeler, and Wright. Among the visitors were Mr. Baird, Miss Beaman, Mrs. Etcheverry, and Mrs. Wheeler.

The minutes of the August meeting were read and approved and were followed by the reading of the minutes of the August meeting of the Southern Division. Miss Eleanor Bennet, Mrs. Edward Hohfeld, and Mr. Arthur Frank were elected to membership and elections by the Southern Division in August were approved. New names proposed were Francis G. Gilchrist, Berkeley, by Tracy I. Storer, and Mrs. Georgianna T. Roe, Berkeley, by Mrs. Eva D. Roe. A communication from the Federal Power Commission, Washington, D. C., outlined its policy "not to entertain or consider any application for use of water-power sites in any National Park."

Business completed, vacation reports were given. Mrs. Kibbe, who walked with her husband through Glacier Park, had familiar interviews with crossbills, pipits, rosy finches, and other interesting species. Mr. Law spoke of the nest of the Cassin Vireo and the miniature thrasher-like song of the Gnatcatcher. Dr. Evermann gave an account of his trip to the Hawaiian Islands, dwelling upon his impressions on visiting Mount Kilauea. Adjourned.—AMELIA S. ALLEN, *Secretary.*

SOUTHERN DIVISION

SEPTEMBER 26, 1920.—The regular monthly meeting of the Southern Division, Cooper Ornithological Club, was held at the home of President Miller, on the banks of the Arroyo Seco, at 3:00 P. M. An attendance of thirty members and fifteen visitors attested the popularity of the occasion.

Minutes of the August meeting were read and approved. Applicants whose names were presented at that meeting were declared elected, on motion of Dr. Esterly, seconded by Dr. Rich, that the secretary be instructed to cast a favoring ballot. New presentations were as follows: Miss Romola M. Adams, Long Beach, by Miss Drachman; Mrs. Edna R. Warmer, Los Angeles, by Dr. Charles Warmer; Miss Alice Rose Livesey, Glendale, by Dr. Miller; Miss Lorene Fritch, Glendale, also by Dr. Miller; William V. Evans, Livingston, Montana, by W. Lee Chambers; Mrs. Herbert Clayburgh, Redwood City, by Mrs. Mervyn Neugass; Miss Catherine V. Beers, University of Southern California, by L. E. Wyman. The Northern Division sent the names of Eleanor V. Bennet, Mrs. Edward Hohfeld, and Arthur Frank.

A proposal to elect Florence Merriam Bailey to honorary membership, following favorable action by the Northern Division, was presented. Mr. Chambers moved that the action of that division be ratified; seconded by Mrs. Fargo, and carried unanimously.

Mr. Dawson was called upon to speak relative to the status of the forthcoming "Birds of California", and brought the good word that this long-delayed publication will soon go to press. Other members contributing brief accounts of recent observations or interesting experiences were Mr. Frank Stephens, Sidney Peyton, Wright Pierce, Miss Mary Mann Miller, Miss Pratt, and Dr. Miller.

Serious business completed, members and friends partook of watermelon and fruit, and congratulated one another and their genial host upon the complete success of the occasion. Adjourned.—L. E. WYMAN, *Secretary.*

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